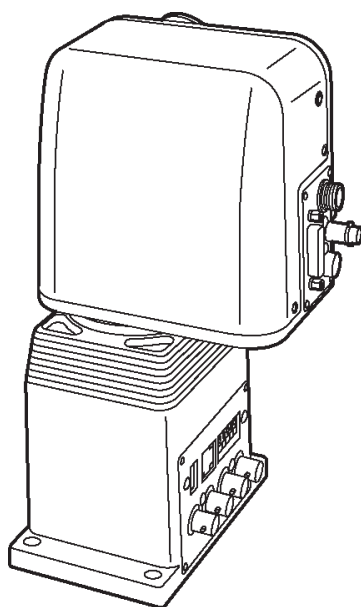


Service Manual

- Sec. 1** *Schematic Diagrams*
- Sec. 2** *Circuit Board Diagrams*
- Sec. 3** *Exploded Views &
Replacement Part List*

Indoor Pan / Tilt Head
AW-PH350P/E



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products deal with in this service manual by anyone else could result in serious injury or death.

AW-PH350P

Specifications

Power supply:

DC +12 V (connector)

Power consumption:

DC +12 V 2.5 A

(camera power included),

DC +12 V 0.7 A

(pan-tilt head only)

 indicates safety information.

Genlock input

Black burst or composite video,

1 V [p-p]/75 Ω (BNC connector)

Camera video output

Composite video:

1 V [p-p]/75 Ω

Component video:

Y = 1 V [p-p]/75 Ω

Pr = 0.7 V [p-p]/75 Ω

Pb = 0.7 V [p-p]/75 Ω

SDI

Camera/pan-tilt head control

RS-422 (8-pin modular jack)

Lamp control

Control signals (connector)

Option control

Control signals (connector)

Maximum cable length

3,280 feet (1,000 meters)

(when BELDEN 8281 coaxial cable and

10BaseT straight cable equivalent to

UTP category 5 are used)

Maximum load capacity

8.8 lb (4 kg)

Allowable operating temperature

14°F to 113°F (–10°C to +45°C)

Allowable operating humidity

Max. 90%

Dimensions (W×H×D)

5 1/8"×9 5/8"×7 9/16"

(130×244×192 mm)

Weight

Approx. 7.7 lb (3.5 kg)

Finish

AV ivory paint (color approximating

Munsell 7.9Y 6.8/0.8)

■ Functions/performance

Tilt range

190 degrees (approx. ± 95 degrees)

Tilt range may be subject to restrictions depending on the mounted camera cable, lens, etc.

Panning range

300 degrees (approx. ± 150 degrees)

Maximum operating speed

25 degrees/sec. for panning,

20 degrees/sec. for tilting

Repeatability

Less than $\pm 3'$

Noise level

Less than NC30

AW-PH350E

Specifications

Power supply:

DC +12 V (connector)

Power consumption:

DC +12 V 2.5 A

(camera power included),

DC +12 V 0.7 A

(pan-tilt head only)

 indique les consignes de sécurité.

Genlock input

Black burst or composite video,
1 V [p-p]/75 Ω (BNC connector)

Camera video output

Composite video:

1 V [p-p]/75 Ω

Component video:

Y = 1 V [p-p]/75 Ω

Pr = 0.525 V [p-p]/75 Ω

Pb = 0.525 V [p-p]/75 Ω

SDI

Camera/pan-tilt head control

RS-422 (8-pin modular jack)

Lamp control

Control signals (connector)

Option control

Control signals (connector)

Maximum cable length

1,000 meters

(when BELDEN 8281 coaxial cable and
10BaseT straight cable equivalent to
UTP category 5 are used)

Maximum load capacity

4 kg

Allowable operating temperature

-10°C to +45°C

Allowable operating humidity

Max. 90%

Dimensions (W×H×D)

130×244×192 mm

Weight

Approx. 3.5 kg

Finish

AV ivory paint (color approximating
Munsell 7.9Y 6.8/0.8)

■ Functions/performance

Tilt range

190 degrees (approx. ± 95 degrees)

Tilt range may be subject to restrictions
depending on the mounted camera
cable, lens, etc.

Panning range

300 degrees (approx. ± 150 degrees)

Maximum operating speed

25 degrees/sec. for panning,

20 degrees/sec. for tilting

Repeatability

Less than $\pm 3'$

Noise level

Less than NC30

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohm meter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. The resistance value must be more than 5M Ω .

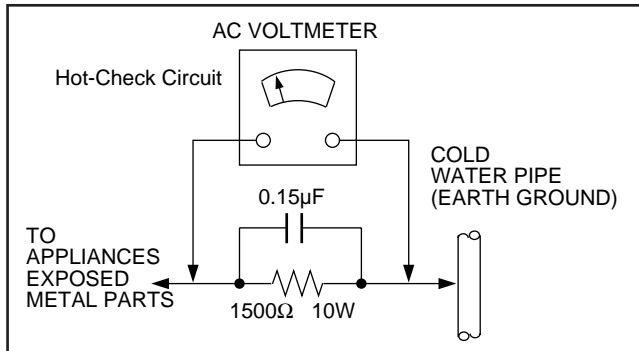


Figure1

LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet.
Do not use an isolation transformer for this check.
2. Connect a 1.5k Ω , 10W resistor, in parallel with a 0.15 μ F capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet repeat each of the above measurements.
6. The potential at any point should not exceed 0.15 volts RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 0.1 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground.
Alternatively, obtain and wear a commercially available discharging wrist trap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it.
(most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpacked replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

X-RADIATION

WARNING

1. The potential source of X-radiation in EVF sets is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 10kV without causing x-radiation.

Note : It is important to use an accurate periodically calibrated high voltage meter.

3. Measure the High Voltage. The meter (electric type) reading should indicate 2.5kV, \pm 0.15kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure. To prevent an x-radiation possibility, it is essential to use the specified picture tube.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER TO SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the appliance.

CAUTION:

Do not install or place this unit in a bookcase, built-in cabinet or in another confined space in order to keep well ventilated condition. Ensure that curtains and any other materials do not obstruct the ventilation condition to prevent risk of electric shock or fire hazard due to overheating.

WARNING:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

FCC Note:

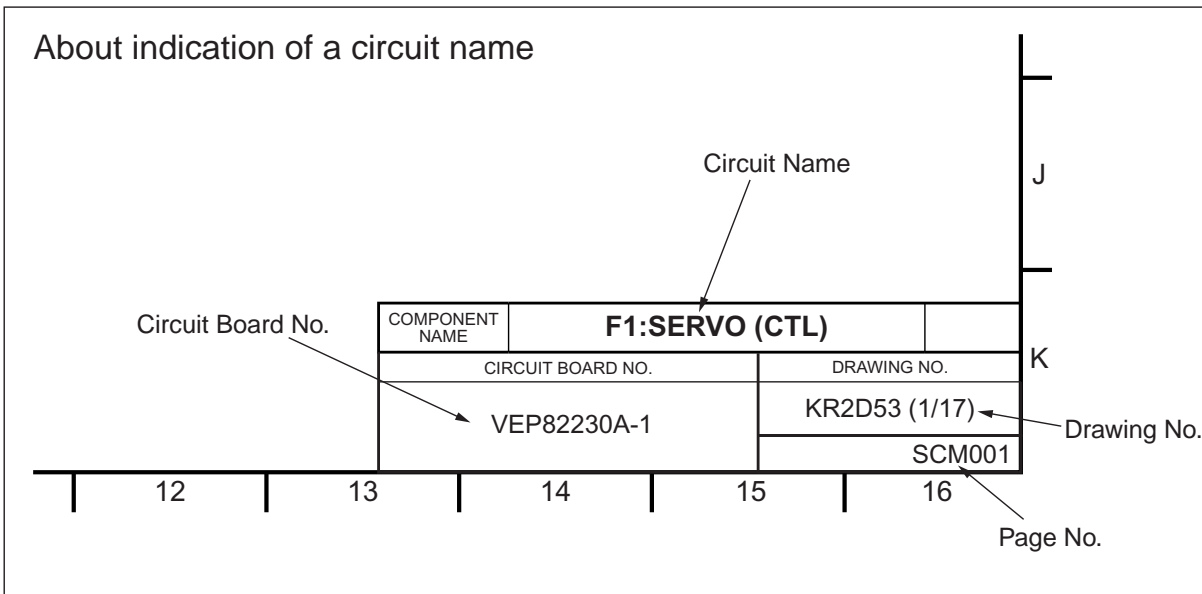
This device complies with Part 15 of the FCC Rules. To assure continued compliance follow the attached installation instructions and do not make any unauthorized modifications.

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Replace battery with part No. VL3032/1GUF only.
Use of another battery may present a risk of fire or explosion.
Caution—Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

SECTION 1

SCHEMATIC DIAGRAMS




NOTE:

BE SURE TO MAKE YOUR ORDERS OF REPLACEMENT PARTS ACCORDING TO PARTS LIST, SECTION3

CAUTION

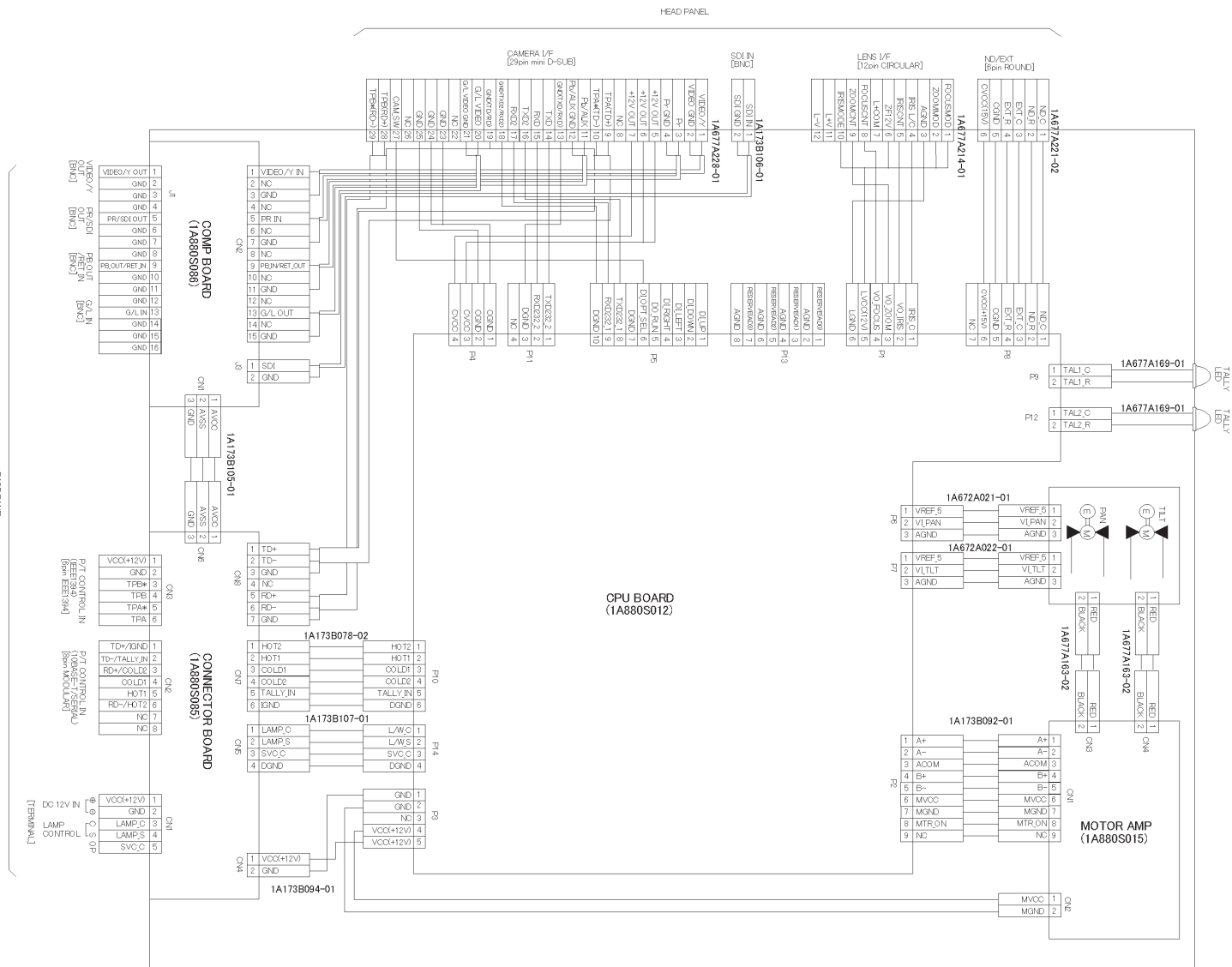
THE ☐ MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

IMPORTANT SAFETY NOTICE:

COMPONENTS IDENTIFIED WITH THE MARK  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

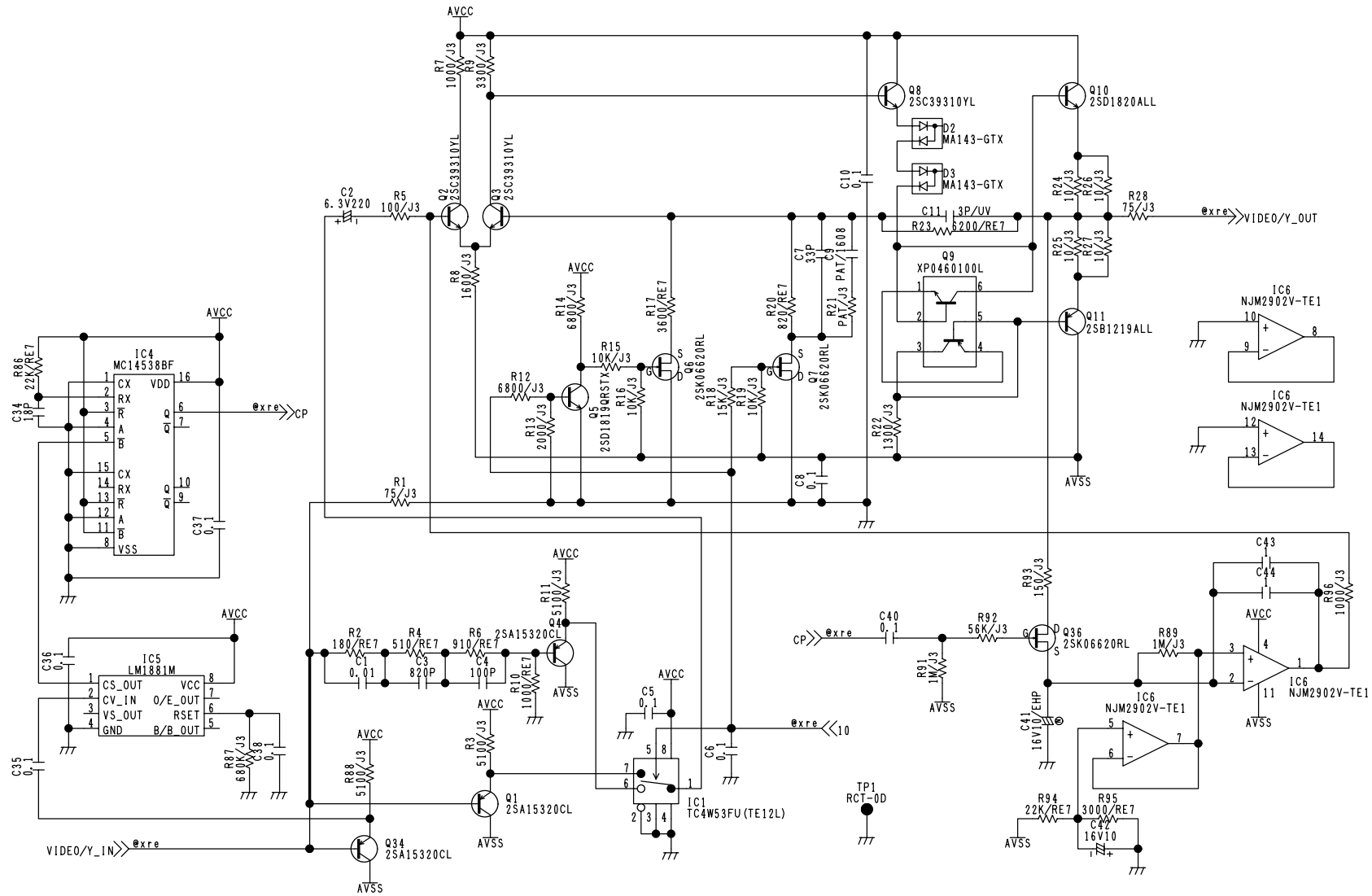
CONTENTS

INTERCONNECTION	SCM001
COMP P.C.BOARD	SCM002
CON P.C.BOARD	SCM006
MOTOR AMP P.C.BOARD	SCM007
CPU P.C.BOARD	SCM008

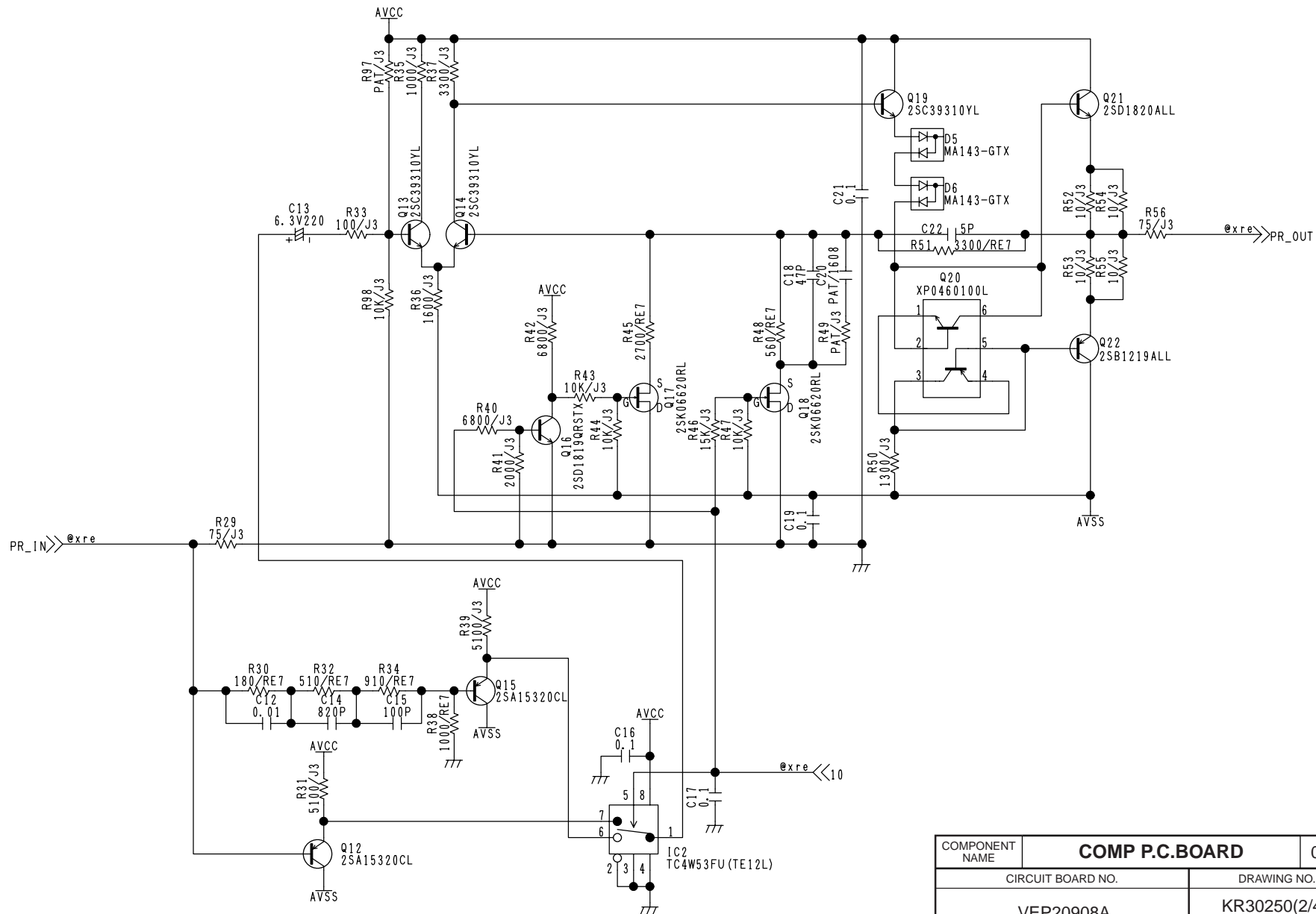


COMPONENT NAME	INTERCONNECTION		01/01
	CIRCUIT BOARD NO.		DRAWING NO.
			SCM001

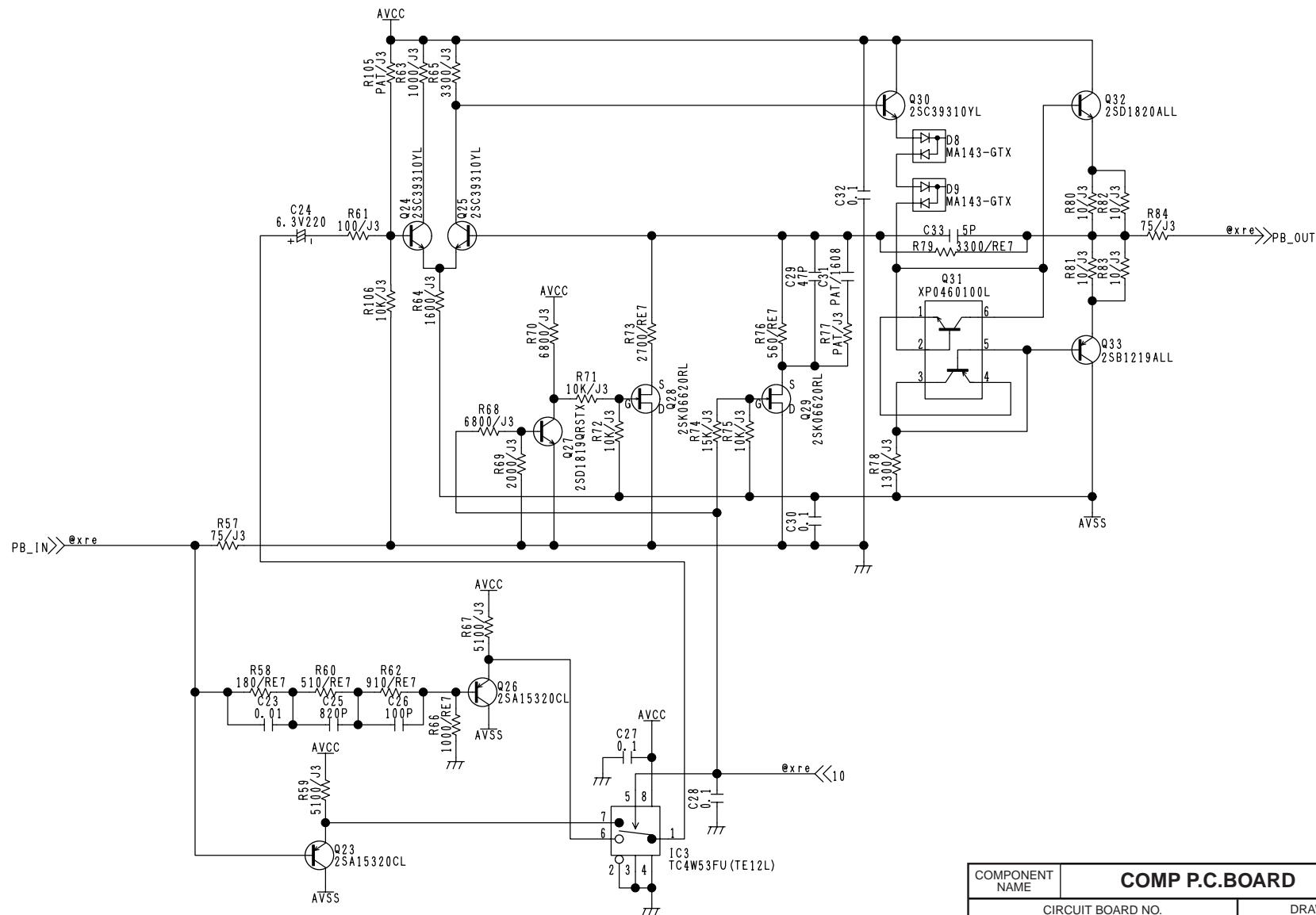
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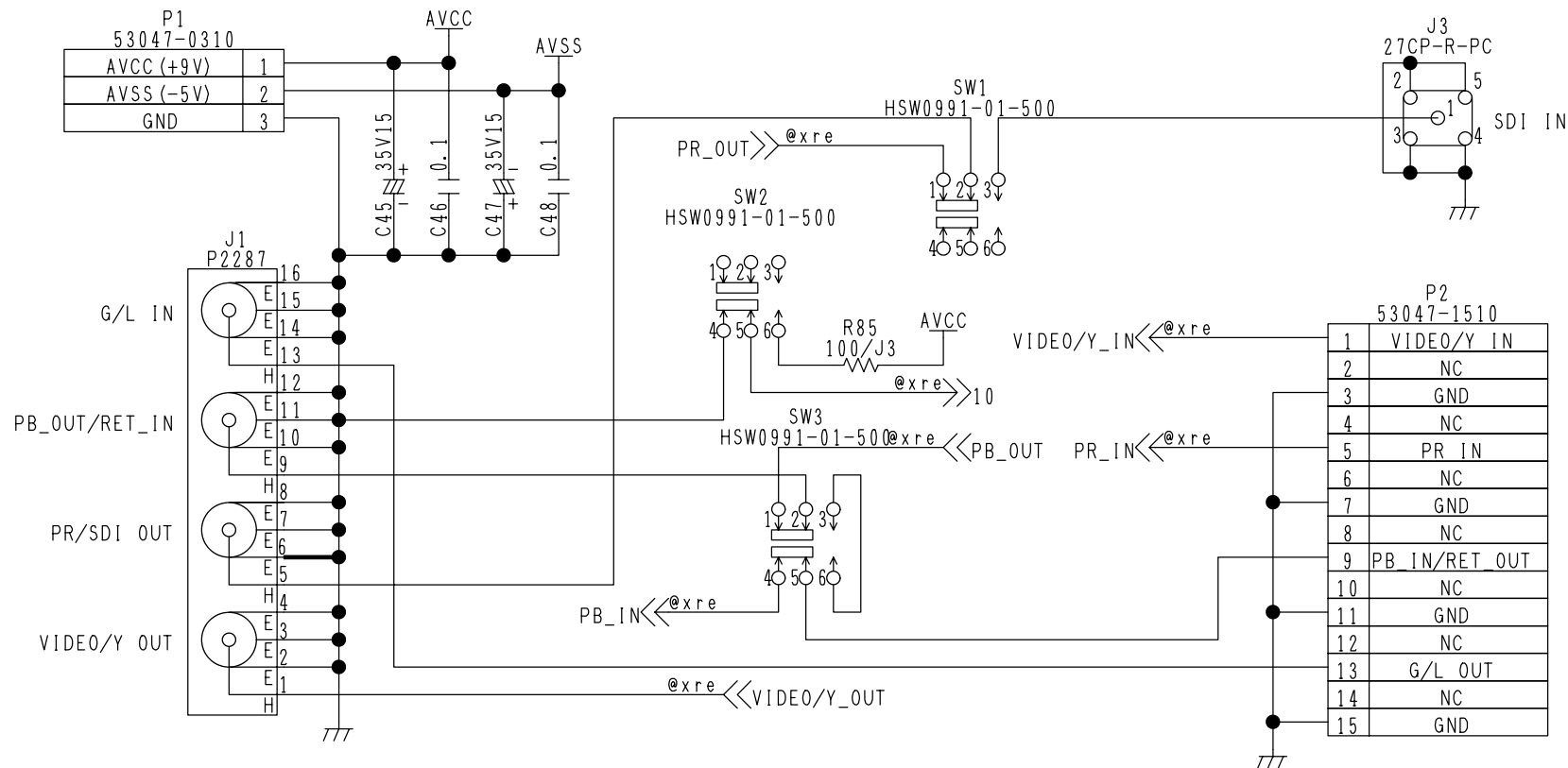
COMPONENT NAME	COMP P.C.BOARD		01/04
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20908A		KR30250 (1/4)	
		SCM002	



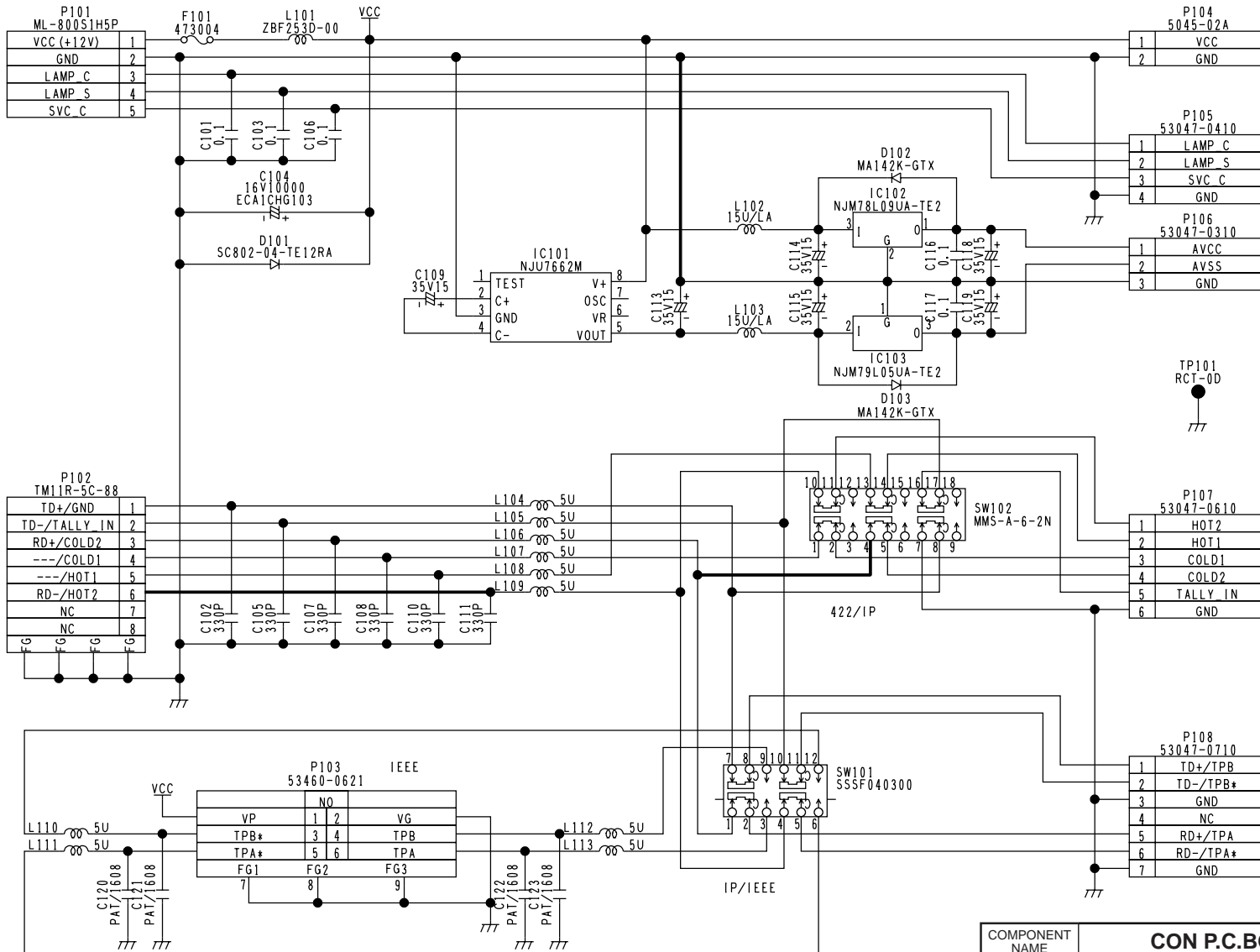
COMPONENT NAME	COMP P.C.BOARD		02/04
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20908A		KR30250(2/4)	
		SCM003	



COMPONENT NAME	COMP P.C.BOARD	03/04
CIRCUIT BOARD NO.	DRAWING NO.	
VEP20908A	KR30250 (3/4)	
	SCM004	



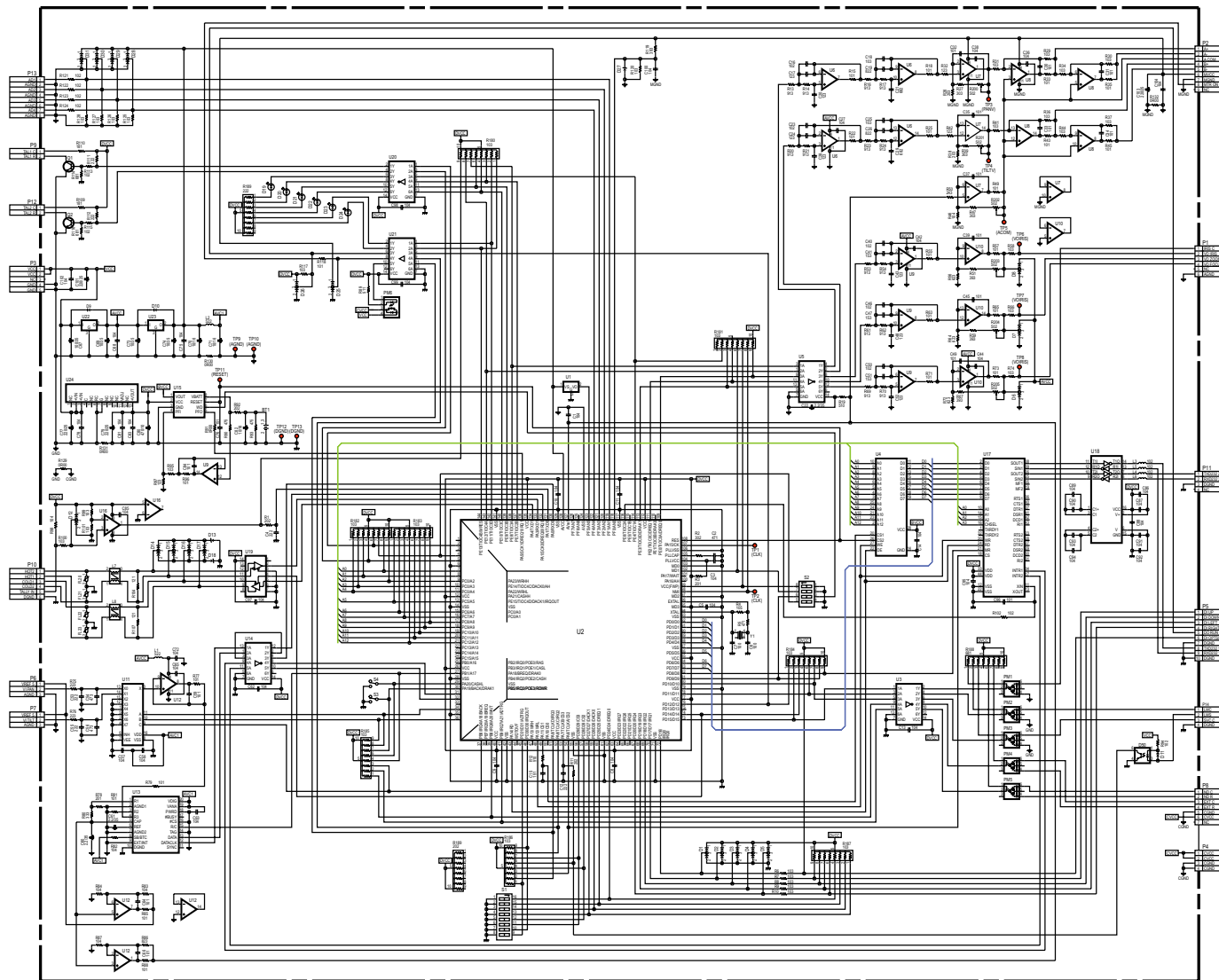
COMPONENT NAME	COMP P.C.BOARD		04/04
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20908A		KR30250 (4/4)	
		SCM005	



COMPONENT NAME	CON P.C.BOARD		01/01
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20909A		KR1F48 (1/1)	
		SCM006	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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COMPONENT NAME	CPU P.C.BOARD		01/01
CIRCUIT BOARD NO.		DRAWING NO.	
WPH60JKZ1A			
		SCM008	

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SECTION 2

CIRCUIT BOARD DIAGRAMS

NOTE:
BE SURE TO MAKE YOUR ORDERS OF REPLACEMENT PARTS ACCORDING TO PARTS LIST, SECTION3

CAUTION

THE ☐ MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

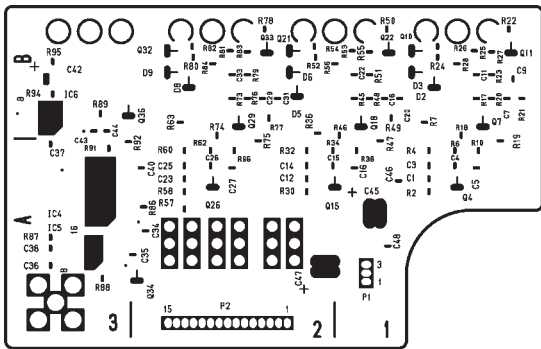
CONTENTS

CPU P.C.BOARD (WPH60JKZ1A)	CBA-1
COMP P.C.BOARD (VEP20908A)	CBA-2
CON P.C.BOARD (VEP20909A)	CBA-2
MOTOR P.C.BOARD (1A880S015)	CBA-2

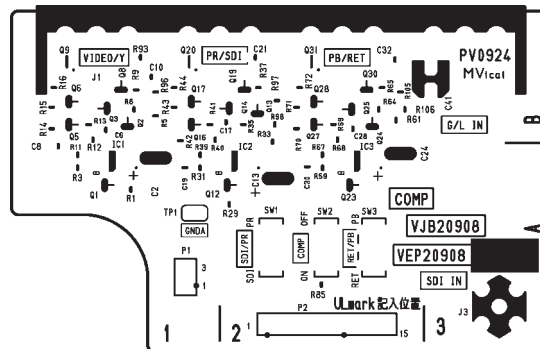
1



COMP P.C.BOARD (VEP20908A)

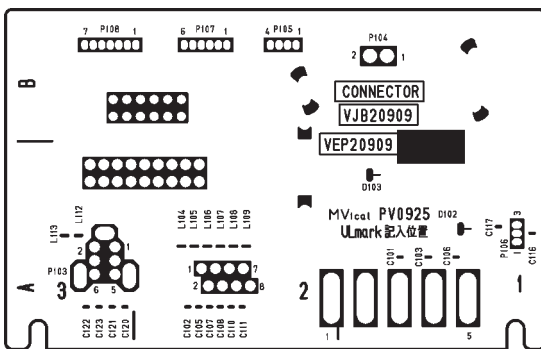


(FOIL SIDE)

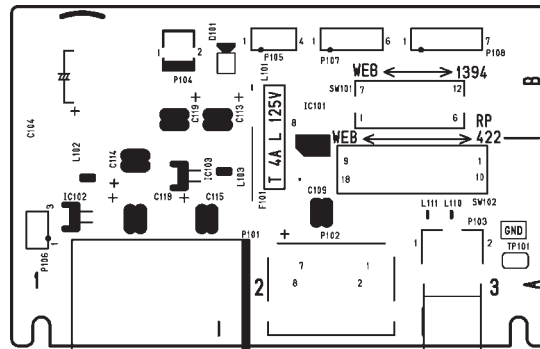


(COMPONENT SIDE)

CON P.C.BOARD (VEP20909A)

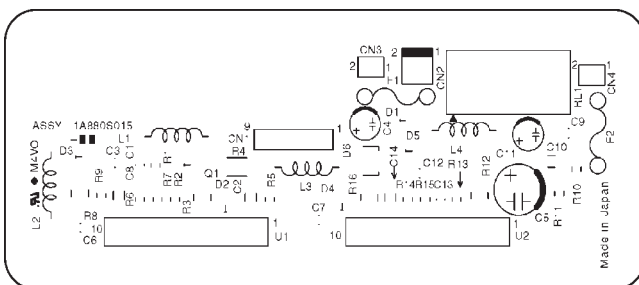


(FOIL SIDE)



(COMPONENT SIDE)

MOTOR P.C.BOARD (1A880S015)



SECTION 3

EXPLODED VIEWS & REPLACEMENT PARTS LISTS

Note:

1. *Be sure to make your orders of replacement parts according to this list.
2. Unless otherwise specified, all resistors are in OHMS, K=1,000 OHMS, all capacitors are in MICROFARADS (μ F), P= μ μ F.
3. The P.C. Board untils marked with "■" shown below the main assembled parts.
4. The parts marked with Ⓔ on the exploded view show the electric parts.
5. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
6. The marking (RTL) indicates the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

CONTENTS

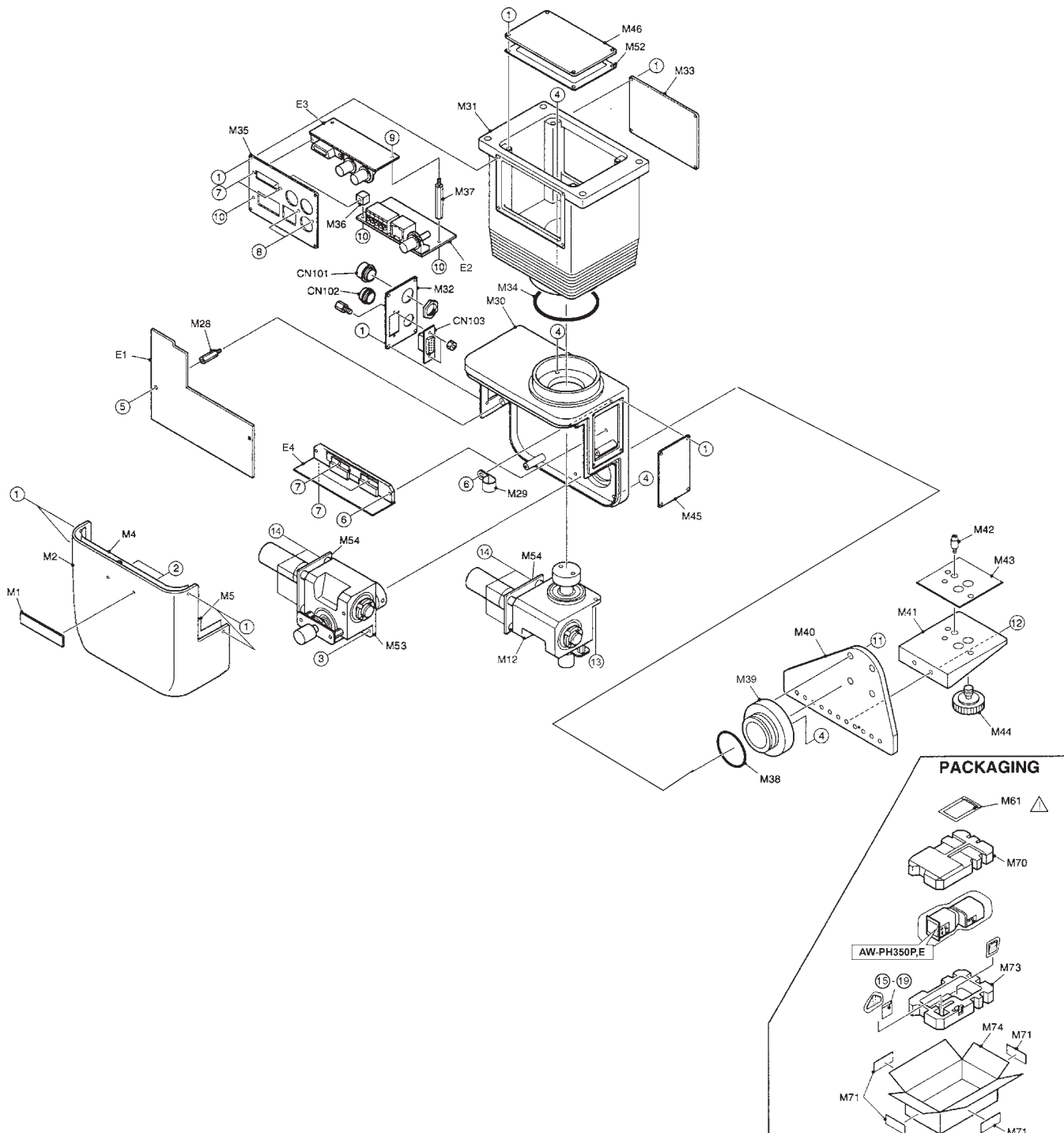
Casing & Packing Parts Assembly	PRT-1
Electrical Replacement Parts List	PRT-4


CASING & PACKING PARTS ASSEMBLY

PRT-1






Components identified with the mark Δ have the special characteristics for safety.
When replacing any of these components, use only the same type.

CASING & PACKING PARTS ASSEMBLY



Components identified with the mark  have the special characteristics for safety.
When replacing any of these components, use only the same type.

ELECTRICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
 E1	WPH60JKZ1A	CPU P.C.BOARD	1	(RTL)	C59	GRM9CH101J5H	C.CAPACITOR 100P	1	
 E2	VEP20908A	COMP P.C.BOARD	1	(RTL)	C60,61	SK31V225MRB	T.CAPACITOR CH 35V 2.2U	2	
 E3	VEP20909A	CONNECTION P.C.BOARD	1	(RTL)	C62,63	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	2	F1H1E104A016
 E4	1A880S015	MOTOR AMP P.C.BOARD	1	(RTL)	C64	GRM9CH101J5H	C.CAPACITOR 100P	1	
					C65	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C66	GRM9CH101J5H	C.CAPACITOR 100P	1	
					C67	F2G1V1010002	E.CAPACITOR 35V 100U	1	
					C68	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C69	F3H1V1060004	T.CAPACITOR CH 35V 10U	1	
					C70,71	VWRVS1C100M	E.CAPACITOR 16V 10U	2	
					C72	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C73,74	F3H1V1060004	T.CAPACITOR CH 35V 10U	2	
					C75	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C76	GRM9CH151J5H	C.CAPACITOR 150P	1	
					C77	F2G1E2210003	E.CAPACITOR 25V 220U	1	
					C78	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C79	F2G1E2210003	E.CAPACITOR 25V 220U	1	
					C80	F2H1A4710001	E.CAPACITOR 25V 470U	1	
					C81	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C82	YWRVS1C100M	E.CAPACITOR 16V 10U	1	
					C83	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C84	GRM9CH151J5H	C.CAPACITOR 150P	1	
					C85	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
 E1	WPH60JKZ1A	CPU P.C.BOARD	1	(RTL)	C86,87	YGM1B104Z1CT	C.CAPACITOR 16V 0.1U	2	
					C88	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
BT1	CR2032	BATTERY	1		C89-94	YGM1B104Z1CT	C.CAPACITOR 16V 0.1U	6	
C1	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	C95	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
C2	YGM1C471J1HT	C.CAPACITOR 50V 470P	1		C96	GRM9CH101J5H	C.CAPACITOR 100P	1	
C3	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	C97-00	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	4	F1H1E104A016
C4	GRM9B222K5H	C.CAPACITOR 50V 2200P	1		C101	F2G1E2210003	E.CAPACITOR 25 220U	1	
C5	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	C102	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
C6,C7	F1H1H100A017	C.CAPACITOR 50V 10P	2		C103	F2G1E2210003	E.CAPACITOR 25 220U	1	
C8-11	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	4	F1H1E104A016	C104	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
C12	GRM9B222K5H	C.CAPACITOR 50V 2200P	1		D1-D8	B0ADDJ000003	DIODE	8	
C13,14	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	2	F1H1E104A016	D9-11	B0JCEE000001	DIODE	3	
C15	GRM9CH151J5H	C.CAPACITOR 150P	1		D12	B0ADDJ000003	DIODE	1	
C16	F1H1H102A190	C.CAPACITOR 50V 1000P	1		D13	B0ZBZ0000029	DIODE	1	
C17	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		D14-17	B0ADDJ000003	DIODE	4	
C18	YGM1B103K1HT	C.CAPACITOR 50V 0.01U	1		D18	B0ZBZ0000029	DIODE	1	
C19	F1H1H822A190	C.CAPACITOR 50V 8200P	1		D25,26	B0ADDJ000003	DIODE	2	
C20	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		D27	B0BC3R600006	DIODE	1	
C21	F1H1H682A190	C.CAPACITOR 50V 6800P	1		D28-31	B0ADDJ000003	DIODE	4	
C22	SK31V225MRB	T.CAPACITOR CH 35V 2.2U	1		D50	B3PBA0000048	DIODE	1	
C23	F1H1H102A190	C.CAPACITOR 50V 1000P	1		DS19-24	TLGD1002	DIODE	6	
C24	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		FL20-23	J0LB00000020	FILTER	4	
C25	YGM1B103K1HT	C.CAPACITOR 50V 0.01U	1		L1,L2	G1C100J000001	COIL	2	
C26	F1H1H822A190	C.CAPACITOR 50V 8200P	1		L3-L6	J0JCC0000004	FILTER	4	
C27	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	L7,L8	Z1YS51R5-2P	COIL	2	
C28	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		P1	K1KA06A00086	CONNECTOR	1	
C29	F1H1H682A190	C.CAPACITOR 50V 6800P	1		P2	K1KA09A00060	CONNECTOR	1	
C30-35	GRM9CH101J5H	C.CAPACITOR 100P	6		P3	K1KA05A00044	CONNECTOR	1	
C36	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P4	K1KA04A00052	CONNECTOR	1	
C37	GRM9CH101J5H	C.CAPACITOR 100P	1		P5	YW533981090	PLUG	1	
C38	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P6,P7	K1KA03A00063	CONNECTOR	2	
C39	GRM9CH101J5H	C.CAPACITOR 100P	1		P8	K1KA07A00079	CONNECTOR	1	
C40	F1H1H102A190	C.CAPACITOR 50V 1000P	1		P9	K1KA02A00066	CONNECTOR	1	
C41	F1H1H153A190	C.CAPACITOR 50V 0.015U	1		P10	K1KA06A00086	CONNECTOR	1	
C42	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P11	K1KA04A00073	CONNECTOR	1	
C43	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		P12	K1KA02A00066	CONNECTOR	1	
C44	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P13	K1KA08A00153	CONNECTOR	1	
C45	GRM9CH101J5H	C.CAPACITOR 100P	1		P14	K1KA04A00073	CONNECTOR	1	
C46	F1H1H102A190	C.CAPACITOR 50V 1000P	1		PM1-M5	AQV212S	RELAY	5	
C47	F1H1H153A190	C.CAPACITOR 50V 0.015U	1		PM6	AQZ102	RELAY	1	
C48	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		Q1,Q2	B1ABCF000031	TRANSISTOR	2	
C49	GRM9CH101J5H	C.CAPACITOR 100P	1		R1	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
C50	F1H1H102A190	C.CAPACITOR 50V 1000P	1		R2	ERJ3RHD302	M.RESISTOR CH 1/16W 3K	1	
C51	F1H1H153A190	C.CAPACITOR 50V 0.015U	1		R3	ERJ3RHD201	M.RESISTOR CH 1/16W 200	1	
C52	F1H1H123A190	C.CAPACITOR 50V 0.012U	1						
C53	GRM9B222K5H	C.CAPACITOR 50V 2200P	1						
C54	YGM1B473K1CT	C.CAPACITOR 50V 0.047U	1						
C55	GRM9B222K5H	C.CAPACITOR 50V 2200P	1						
C56	YGM1B473K1CT	C.CAPACITOR 50V 0.047U	1						
C57,58	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	2	F1H1E104A016					

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R4	ERJ3GEYF105	M.RESISTOR CH 1/16W 1M	1	
R5	ERJ3RHD471	M.RESISTOR CH 1/16W 470	1	
R6-10	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	5	
R11	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R12	ERJ3GEYJ510	M.RESISTOR CH 1/16W 51	1	
R13,14	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R15	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R16,17	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R18	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R19	ERJ3GEYJ510	M.RESISTOR CH 1/16W 51	1	
R20,21	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R22	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R23,24	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R25	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R26	ERJ3RHD203	M.RESISTOR CH 1/16W 20K	1	
R27	ERJ3RHD303	M.RESISTOR CH 1/16W 30K	1	
R29	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R31	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R32	ERJ3RHD123	M.RESISTOR CH 1/16W 12K	1	
R33	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R34	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R35	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R36,37	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	2	
R38	ERJ3RHD203	M.RESISTOR CH 1/16W 20K	1	
R39	ERJ3RHD303	M.RESISTOR CH 1/16W 30K	1	
R41	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R42	ERJ3RHD123	M.RESISTOR CH 1/16W 12K	1	
R43	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R44	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R45	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R46	ERJ3RHD104	M.RESISTOR CH 1/16W 100K	1	
R47	ERJ3RHD303	M.RESISTOR CH 1/16W 30K	1	
R49	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R50	ERJ3RHD243	M.RESISTOR CH 1/16W 24K	1	
R51	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	
R53,54	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R55	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R56	ERJ3RHD623	M.RESISTOR CH 1/16W 62K	1	
R57	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R58	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R59	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	
R61,62	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R63	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R64	ERJ3RHD623	M.RESISTOR CH 1/16W 62K	1	
R65	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R66	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R67	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	
R69,70	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R71	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R72	ERJ3RHD623	M.RESISTOR CH 1/16W 62K	1	
R73	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R74	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R75,76	ERJ3RHD223	M.RESISTOR CH 1/16W 22K	2	
R77	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R78	ERJ3RHD201	M.RESISTOR CH 1/16W 200	1	
R79	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R80	ERJ3RHD333	M.RESISTOR CH 1/16W 33K	1	
R81	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R82	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R83,84	ERJ3RHD104	M.RESISTOR CH 1/16W 100K	2	
R85	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R86	ERJ3RHD823	M.RESISTOR CH 1/16W 82K	1	
R87	ERJ3RHD104	M.RESISTOR CH 1/16W 100K	1	
R88	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R89	ERJ3GEYJ511	M.RESISTOR CH 1/16W 510	1	
R90	ERJ3GEYJ475	M.RESISTOR CH 1/16W 4.7M	1	
R91	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R92	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R93	ERJ3GEYJ475	M.RESISTOR CH 1/16W 4.7M	1	
R94	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R95	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R96	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R97	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R98	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R99-01	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R102	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R104	ERJ14YJ121	M.RESISTOR CH 1/4W 120	1	
R107	ERJ14YJ121	M.RESISTOR CH 1/4W 120	1	
R109,10	ERJ14YJ181	M.RESISTOR CH 1/4W 180	2	
R111,12	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R113	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R114	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R115	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R116	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R117	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R118	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R119	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	ERJ3RHD393V
R120	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R121-24	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	4	
R125-28	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	4	
R129-32	ERJ8GEY0R00	M.RESISTOR CH 1/8W 0	4	
R180-87	D1HA10380003	C.RESISTOR 1/16W 10K	8	
R188	D1HA68180001	C.RESISTOR 1/16W 680	1	
R189	D1HA22280002	C.RESISTOR 1/16W 2.2K	1	
R200-05	D3EC45020006	V.RESISTOR 1/4W 5K	6	
S1	YWCHS08B	SWITCH	1	
S2	YWCHS04TB	SWITCH	1	
S3,S4	K0D126A00001	SWITCH	2	
TP1-13	YWRCT2125TPV	TERMINAL PIN	13	
U1	C1ZBZ0001200	IC	1	
U2	C2DBKG000002	IC	1	
U3	YWSN74LS07NS	IC	1	
U4	YWHM6264BLFP	IC	1	
U5	COJBAB000196	IC	1	
U6	LMC6484IM	IC	1	
U7,U8	COABCB000021	IC	2	
U9,10	LMC6484IM	IC	2	
U11	YW,C14051BF	IC	1	
U12	LMC6484IM	IC	1	
U13	COFBAH000004	IC	1	
U14	COJBAB000196	IC	1	
U15	COEBJ0000043	IC	1	
U16	COBBB0000006	IC	1	
U17	C1DZ00000005	IC	1	
U18	C1DB000000294	IC	1	
U19	C1DB000000295	IC	1	
U20	COJBCZ000137	IC	1	
U21	YWSN74LS07NS	IC	1	
U22	COCBAAH00002	IC	1	
U23	C0DBZGH000001	IC	1	YW78L05UATE2
U24	HRD050R6	IC	1	
X1	BCR20V4	HOLDER	1	
Y1	H0J600400003	CRYSTAL OSCILLATOR	1	
■ E2	VEP20908A	COMP P.C.BOARD	1 (RTL)	
C1	YGM1B103K1HT	C.CAPACITOR CH 50V 0.01U	1	F1H1H103A190
C2	F3H0J2270002	T.CAPACITOR CH6.3V 220U	1	
C3	5X821K5VT	C.CAPACITOR CH 50V 820P	1	F1H1H821A013
C4	YGM1C101J1HT	C.CAPACITOR CH 50V 100P	1	F1H1H101A231
C5,C6	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	2	F1H1E104A016
C7	YGM1C330J1HT	C.CAPACITOR CH 50V 33P	1	F1H1H330A231
C8	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C10	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C11	ECUX1H030CCV	C.CAPACITOR CH 50V 3P	1	
C12	YGM1B103K1HT	C.CAPACITOR CH 50V 0.01U	1	F1H1H103A190
C13	F3H0J2270002	T.CAPACITOR CH6.3V 220U	1	
C14	5X821K5VT	C.CAPACITOR CH 50V 820P	1	F1H1H821A013
C15	YGM1C101J1HT	C.CAPACITOR CH 50V 100P	1	F1H1H101A231
C16,17	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	2	F1H1E104A016

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C18	YGM1C470J1HT	C.CAPACITOR CH 50V 47P	1	
C19	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C21	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C22	YGM1C050C1HT	C.CAPACITOR CH 50V 5P	1	F1H1H4R9A243
C23	YGM1B103K1HT	C.CAPACITOR CH 50V 0.01U	1	F1H1H103A190
C24	F3H0J2270002	T.CAPACITOR CH6.3V 220U	1	
C25	5X821K5VT	C.CAPACITOR CH 50V 820P	1	F1H1H821A013
C26	YGM1C101J1HT	C.CAPACITOR CH 50V 100P	1	F1H1H101A231
C27,28	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	2	F1H1E104A016
C29	YGM1C470J1HT	C.CAPACITOR CH 50V 47P	1	
C30	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C32	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C33	YGM1C050C1HT	C.CAPACITOR CH 50V 5P	1	F1H1H4R9A243
C34	YGM1C180J1HT	C.CAPACITOR CH 50V 18P	1	F1H1H180A231
C35-38	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	4	F1H1E104A016
C40	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C41	EEVHP1C100	E.CAPACITOR 16V 10U	1	
C42	F3F1C1060002	T.CAPACITOR CH 16V 10U	1	
C43,44	YGM1F105Z1AT	C.CAPACITOR CH 10V 1U	2	
C45	SK31V156KRD0	T.CAPACITOR CH 35V 15U	1	F3H1V1560001
C46	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C47	SK31V156KRD0	T.CAPACITOR CH 35V 15U	1	F3H1V1560001
C48	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
D2,D3	MA3J14300L	DIODE	2	
D5,D6	MA3J14300L	DIODE	2	
D8,D9	MA3J14300L	DIODE	2	
IC1-C3	TC4W53FU	IC	3	
IC4	MC14538BF	IC	1	C0JBAM000009
IC5	YWL1881M	IC	1	
IC6	C0ABCA000038	IC	1	
J1	P2287	CONNECTOR	1	K1QBB4BB0003
J3	K1QBB1BA0011	CONNECTOR	1	
P1	K1KA03A00055	CONNECTOR	1	
P2	53047-1510	CONNECTOR	1	K1KA15A00022
Q1	2SA1532-CD	TRANSISTOR	1	
Q2,Q3	2SC3931-C	TRANSISTOR	2	
Q4	2SA1532-CD	TRANSISTOR	1	
Q5	2SD1819QRS	TRANSISTOR	1	
Q6,Q7	2SK662-R	TRANSISTOR	2	
Q8	2SC3931-C	TRANSISTOR	1	
Q9	XP4601	TRANSISTOR-RESISTOR	1	
Q10	2SD1820A-R	TRANSISTOR	1	
Q11	2SB1219A-R	TRANSISTOR	1	
Q12	2SA1532-CD	TRANSISTOR	1	
Q13,14	2SC3931-C	TRANSISTOR	2	
Q15	2SA1532-CD	TRANSISTOR	1	
Q16	2SD1819QRS	TRANSISTOR	1	
Q17,18	2SK662-R	TRANSISTOR	2	
Q19	2SC3931-C	TRANSISTOR	1	
Q20	XP4601	TRANSISTOR-RESISTOR	1	
Q21	2SD1820A-R	TRANSISTOR	1	
Q22	2SB1219A-R	TRANSISTOR	1	
Q23	2SA1532-CD	TRANSISTOR	1	
Q24,25	2SC3931-C	TRANSISTOR	2	
Q26	2SA1532-CD	TRANSISTOR	1	
Q27	2SD1819QRS	TRANSISTOR	1	
Q28,29	2SK662-R	TRANSISTOR	2	
Q30	2SC3931-C	TRANSISTOR	1	
Q31	XP4601	TRANSISTOR-RESISTOR	1	
Q32	2SD1820A-R	TRANSISTOR	1	
Q33	2SB1219A-R	TRANSISTOR	1	
Q34	2SA1532-CD	TRANSISTOR	1	
Q36	2SK662-R	TRANSISTOR	1	
R1	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	1	
R2	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R3	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R4	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R5	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R6	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	

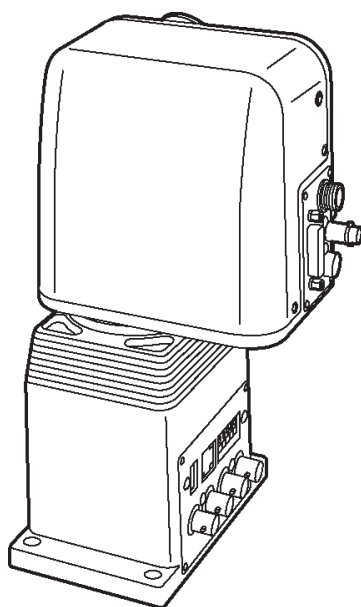
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R7	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R9	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R10	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R11	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R12	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R13	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R14	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R15,16	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R17	ERJ3RBD362	M.RESISTOR CH 1/16W 3.6K	1	
R18	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R19	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R20	ERJ3RBD821	M.RESISTOR CH 1/16W 820	1	
R22	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R23	ERJ3RBD622	M.RESISTOR CH 1/16W 6.2K	1	
R24-27	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R28,29	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	2	
R30	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R31	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R32	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R33	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R34	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	
R35	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R36	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R37	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R38	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R39	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R40	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R41	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R42	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R43,44	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R45	ERJ3RBD272	M.RESISTOR CH 1/16W 2.7K	1	
R46	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R47	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R48	ERJ3RBD561	M.RESISTOR CH 1/16W 560	1	
R50	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R51	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R52-55	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R56,57	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	2	
R58	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R59	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R60	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R61	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R62	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	
R63	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R64	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R65	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R66	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R67	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R68	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R69	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R70	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R71,72	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R73	ERJ3RBD272	M.RESISTOR CH 1/16W 2.7K	1	
R74	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R75	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R76	ERJ3RBD561	M.RESISTOR CH 1/16W 560	1	
R78	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R79	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R80-83	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R84	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	1	
R85	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R86	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R87	ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1	
R88	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R89	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R91	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R92	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R93	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R94	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R95	ERJ3RBD302	M.RESISTOR CH 1/16W 3K	1	
R96	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R98	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R106	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	

Panasonic

Service Manual

- Sec. 1** *Schematic Diagrams*
- Sec. 2** *Circuit Board Diagrams*
- Sec. 3** *Exploded Views &
Replacement Part List*

Indoor Pan / Tilt Head
AW-PH350P/E



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products deal with in this service manual by anyone else could result in serious injury or death.

AW-PH350P

Specifications

Power supply:

DC +12 V (connector)


Power consumption:

DC +12 V 2.5 A

(camera power included),

DC +12 V 0.7 A

(pan-tilt head only)

 indicates safety information.

Genlock input

Black burst or composite video,

1 V [p-p]/75 Ω (BNC connector)

Camera video output

Composite video:

1 V [p-p]/75 Ω

Component video:

Y = 1 V [p-p]/75 Ω

Pr = 0.7 V [p-p]/75 Ω

Pb = 0.7 V [p-p]/75 Ω

SDI

Camera/pan-tilt head control

RS-422 (8-pin modular jack)

Lamp control

Control signals (connector)

Option control

Control signals (connector)

Maximum cable length

3,280 feet (1,000 meters)

(when BELDEN 8281 coaxial cable and

10BaseT straight cable equivalent to

UTP category 5 are used)

Maximum load capacity

8.8 lb (4 kg)

Allowable operating temperature

14°F to 113°F (–10°C to +45°C)

Allowable operating humidity

Max. 90%

Dimensions (W×H×D)

5 1/8"×9 5/8"×7 9/16"

(130×244×192 mm)

Weight

Approx. 7.7 lb (3.5 kg)

Finish

AV ivory paint (color approximating

Munsell 7.9Y 6.8/0.8)

■ Functions/performance

Tilt range

190 degrees (approx. ± 95 degrees)

Tilt range may be subject to restrictions depending on the mounted camera cable, lens, etc.

Panning range

300 degrees (approx. ± 150 degrees)

Maximum operating speed

25 degrees/sec. for panning,

20 degrees/sec. for tilting

Repeatability

Less than $\pm 3'$

Noise level

Less than NC30

AW-PH350E

Specifications

Power supply:

DC +12 V (connector)

Power consumption:

DC +12 V 2.5 A

(camera power included),

DC +12 V 0.7 A

(pan-tilt head only)

 indique les consignes de sécurité.

Genlock input

Black burst or composite video,
1 V [p-p]/75 Ω (BNC connector)

Camera video output

Composite video:

1 V [p-p]/75 Ω

Component video:

Y = 1 V [p-p]/75 Ω

Pr = 0.525 V [p-p]/75 Ω

Pb = 0.525 V [p-p]/75 Ω

SDI

Camera/pan-tilt head control

RS-422 (8-pin modular jack)

Lamp control

Control signals (connector)

Option control

Control signals (connector)

Maximum cable length

1,000 meters

(when BELDEN 8281 coaxial cable and
10BaseT straight cable equivalent to
UTP category 5 are used)

Maximum load capacity

4 kg

Allowable operating temperature

-10°C to +45°C

Allowable operating humidity

Max. 90%

Dimensions (W×H×D)

130×244×192 mm

Weight

Approx. 3.5 kg

Finish

AV ivory paint (color approximating
Munsell 7.9Y 6.8/0.8)

■ Functions/performance

Tilt range

190 degrees (approx. ± 95 degrees)

Tilt range may be subject to restrictions
depending on the mounted camera
cable, lens, etc.

Panning range

300 degrees (approx. ± 150 degrees)

Maximum operating speed

25 degrees/sec. for panning,

20 degrees/sec. for tilting

Repeatability

Less than $\pm 3'$

Noise level

Less than NC30

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohm meter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. The resistance value must be more than 5M Ω .

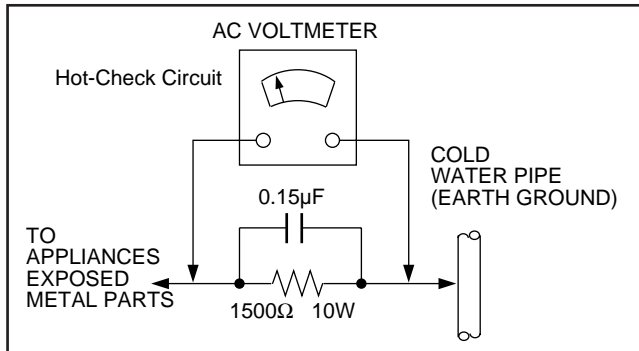


Figure1

LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet.
Do not use an isolation transformer for this check.
2. Connect a 1.5k Ω , 10W resistor, in parallel with a 0.15µF capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet repeat each of the above measurements.
6. The potential at any point should not exceed 0.15 volts RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 0.1 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground.
Alternatively, obtain and wear a commercially available discharging wrist trap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it.
(most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpacked replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

X-RADIATION

WARNING

1. The potential source of X-radiation in EVF sets is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 10kV without causing x-radiation.

Note : It is important to use an accurate periodically calibrated high voltage meter.

3. Measure the High Voltage. The meter (electric type) reading should indicate 2.5kV, \pm 0.15kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure. To prevent an x-radiation possibility, it is essential to use the specified picture tube.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER TO SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the appliance.

CAUTION:

Do not install or place this unit in a bookcase, built-in cabinet or in another confined space in order to keep well ventilated condition. Ensure that curtains and any other materials do not obstruct the ventilation condition to prevent risk of electric shock or fire hazard due to overheating.

WARNING:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

FCC Note:

This device complies with Part 15 of the FCC Rules. To assure continued compliance follow the attached installation instructions and do not make any unauthorized modifications.

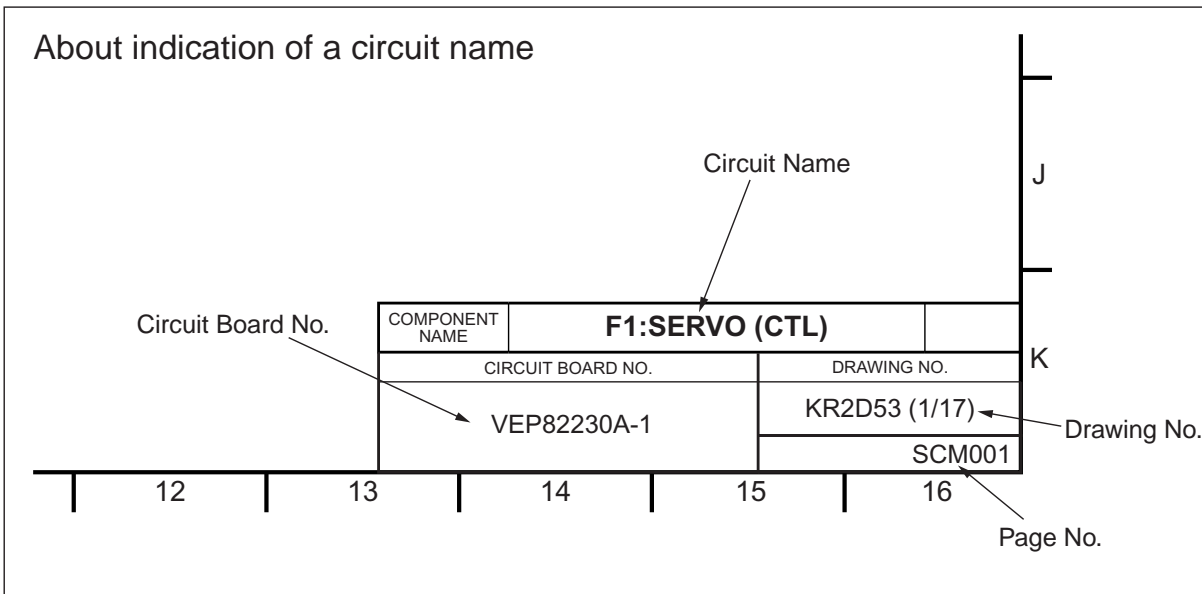
This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Replace battery with part No. VL3032/1GUF only.
Use of another battery may present a risk of fire or explosion.
Caution—Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

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SECTION 1

SCHEMATIC DIAGRAMS




NOTE:

BE SURE TO MAKE YOUR ORDERS OF REPLACEMENT PARTS ACCORDING TO PARTS LIST, SECTION3

CAUTION

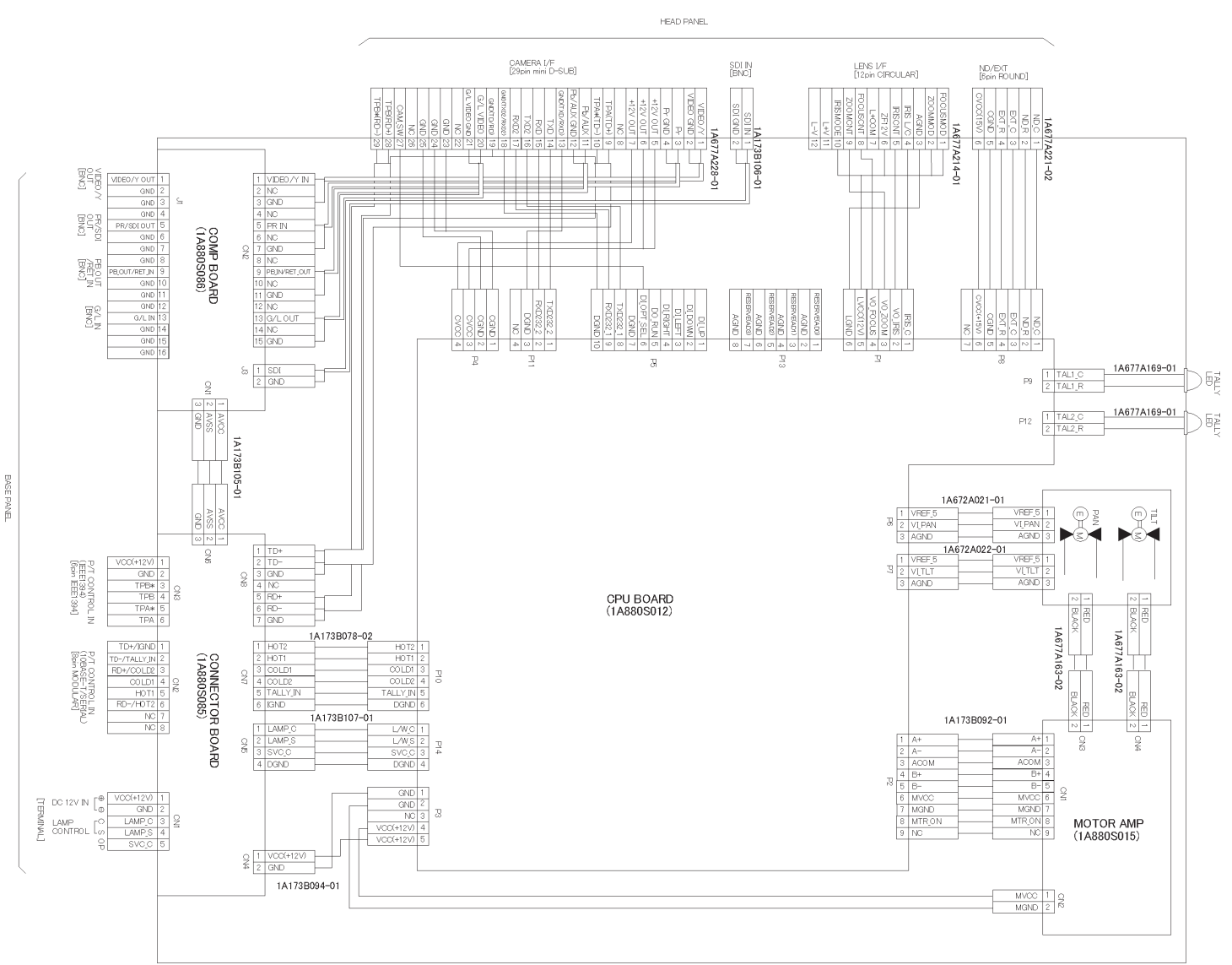
THE ☐ MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

IMPORTANT SAFETY NOTICE:

COMPONENTS IDENTIFIED WITH THE MARK  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

CONTENTS

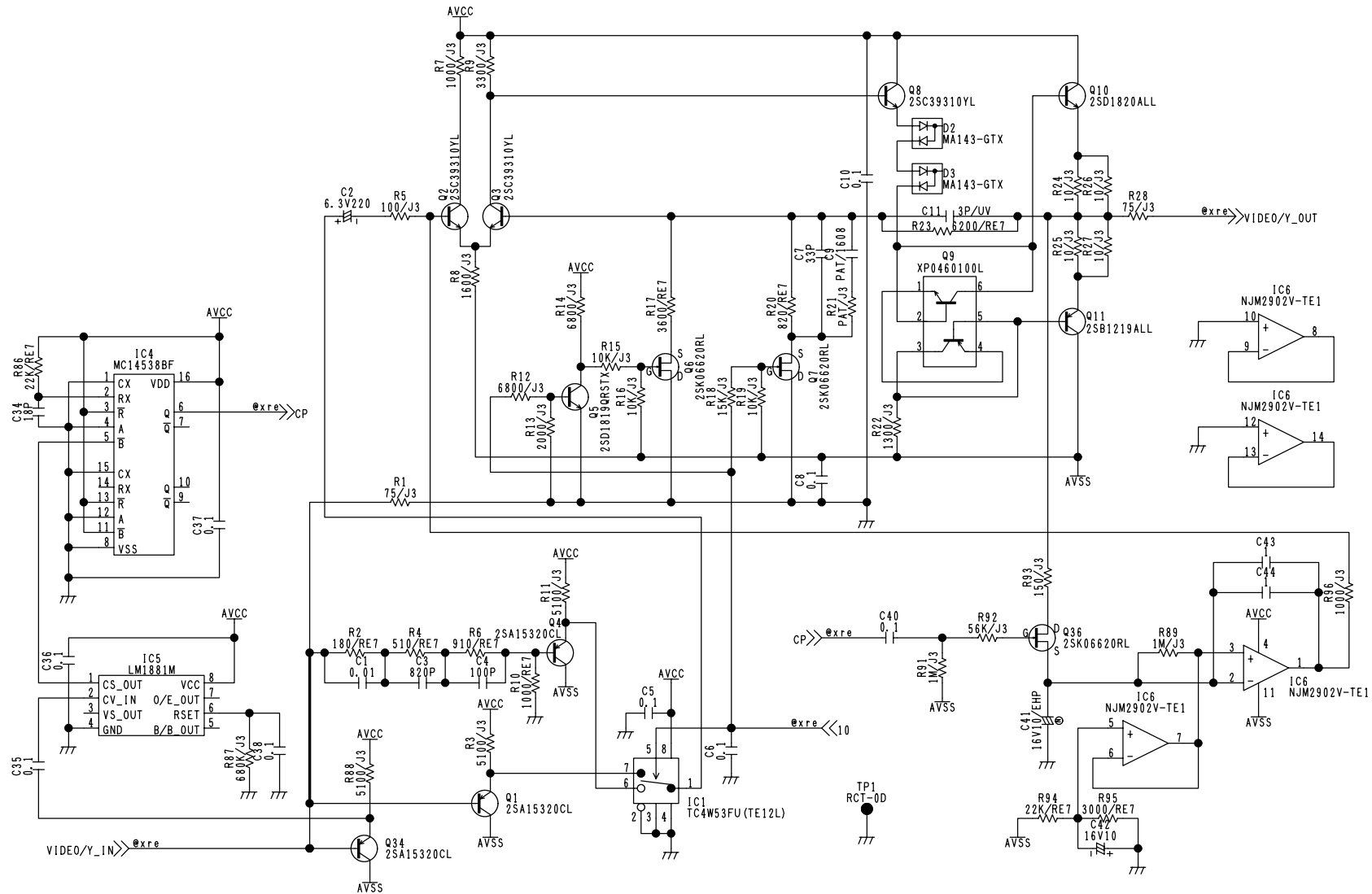
INTERCONNECTION	SCM001
COMP P.C.BOARD	SCM002
CON P.C.BOARD	SCM006
MOTOR AMP P.C.BOARD	SCM007
CPU P.C.BOARD	SCM008



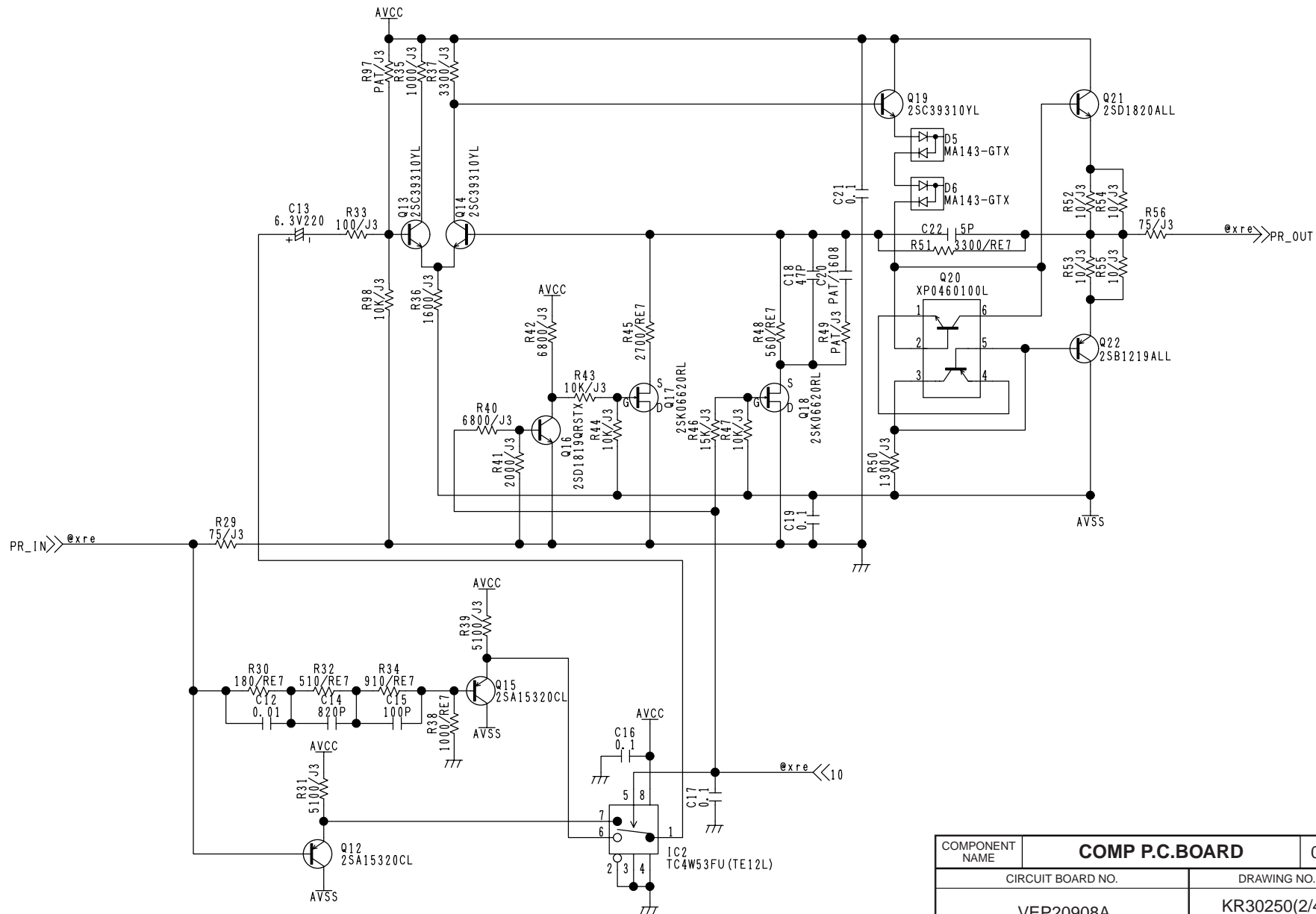
COMPONENT NAME	INTERCONNECTION		01/01
	CIRCUIT BOARD NO.		DRAWING NO.
			SCM001

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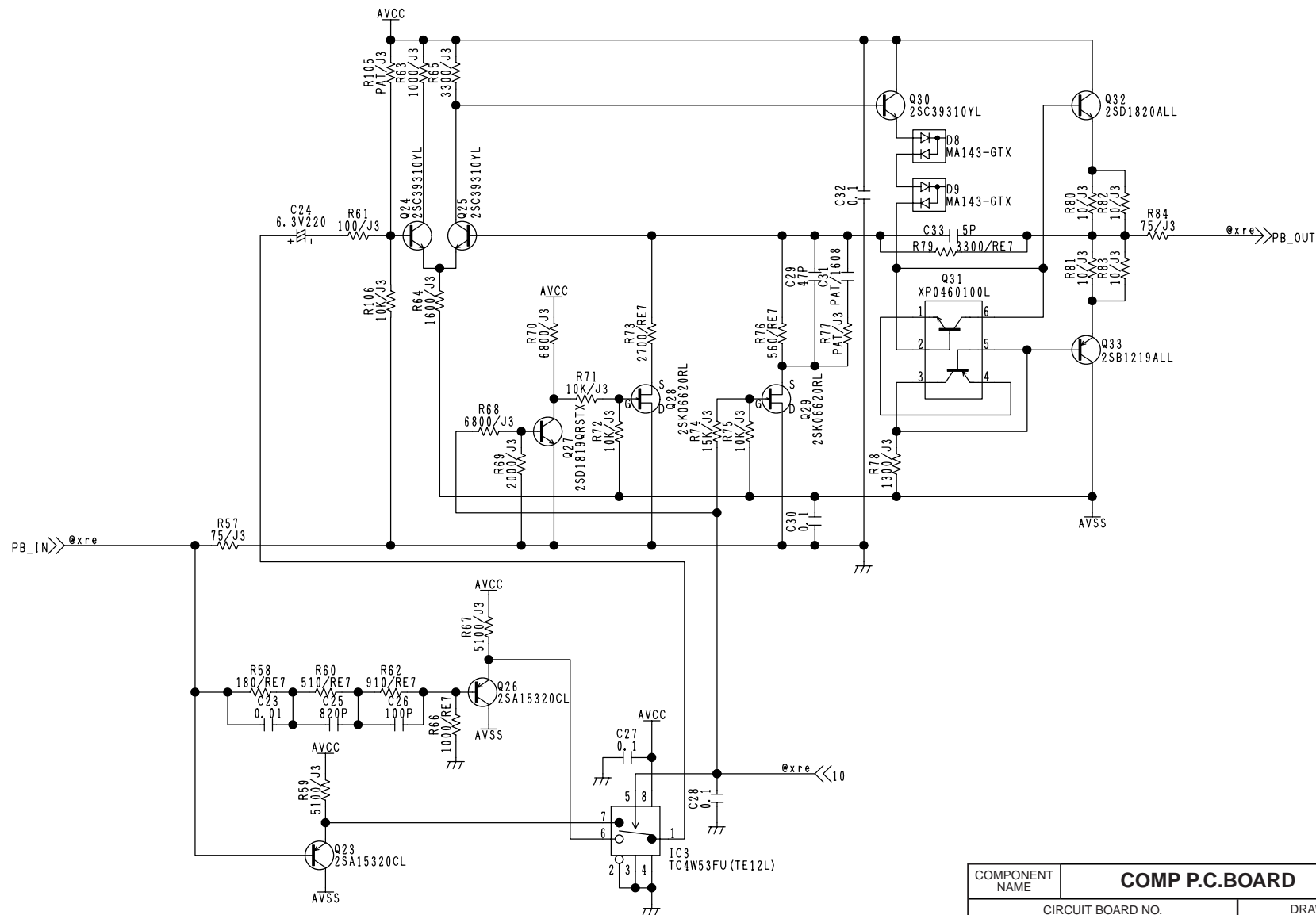
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



COMPONENT NAME	COMP P.C.BOARD		01/04
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20908A		KR30250 (1/4)	
		SCM002	



COMPONENT NAME	COMP P.C.BOARD		02/04
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20908A		KR30250(2/4)	
		SCM003	



COMPONENT NAME	COMP P.C.BOARD		03/04
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20908A		KR30250 (3/4)	
		SCM004	

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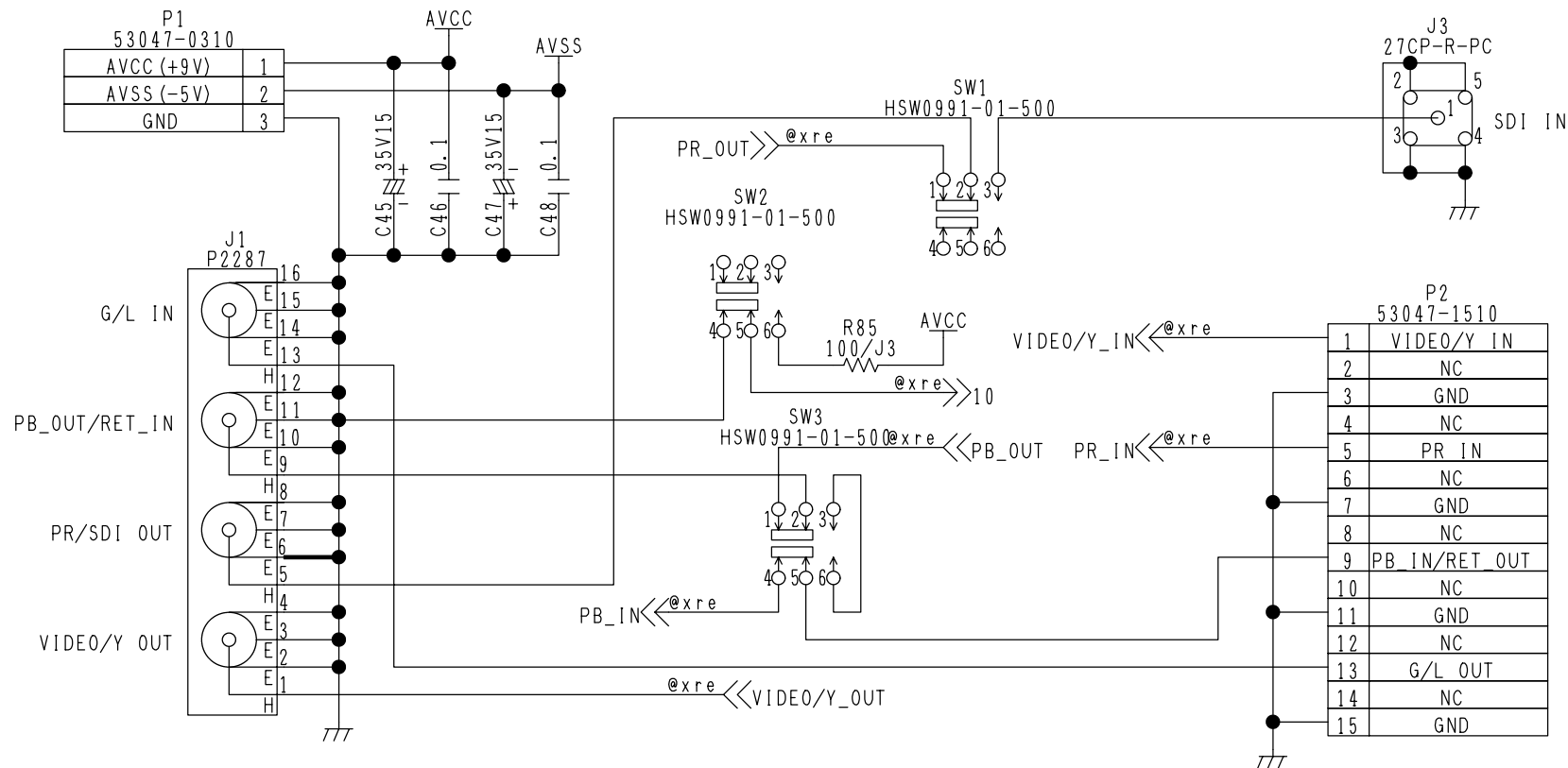
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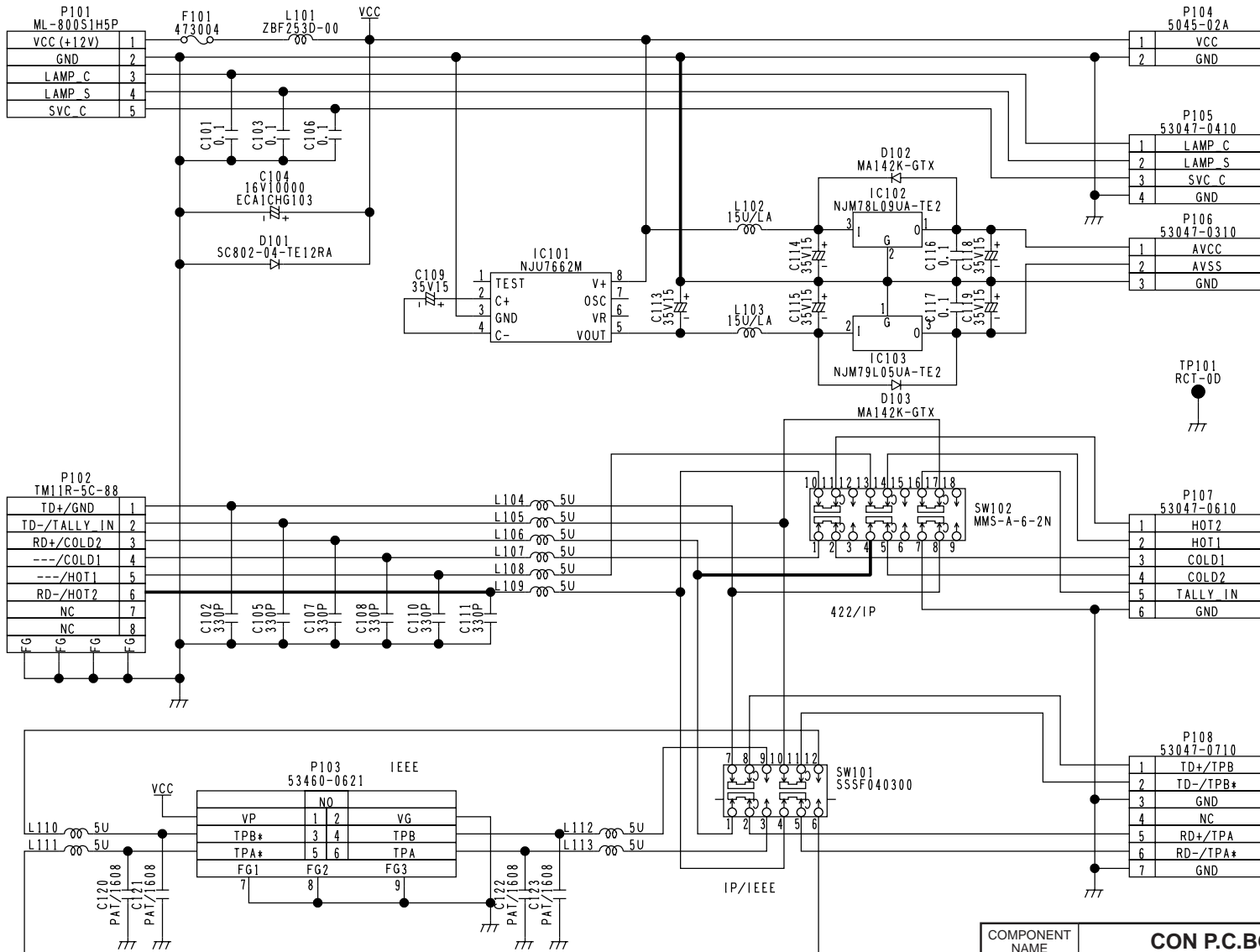
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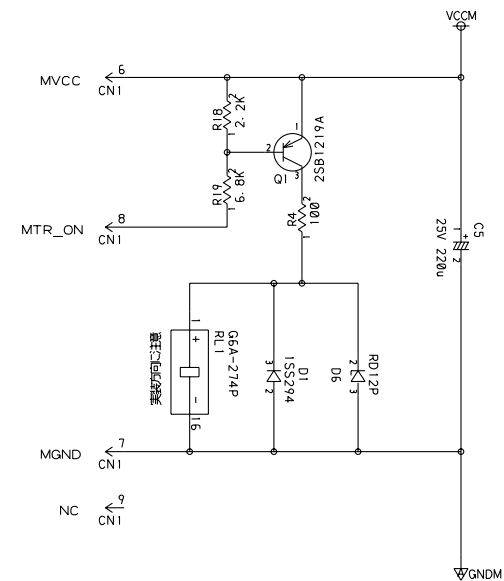
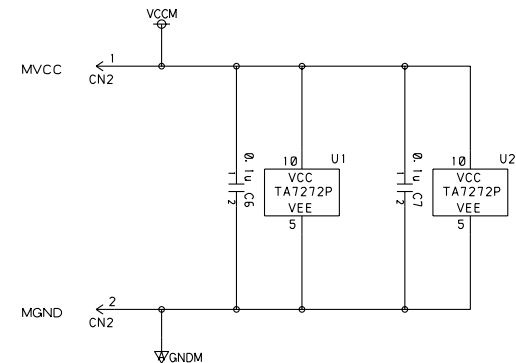
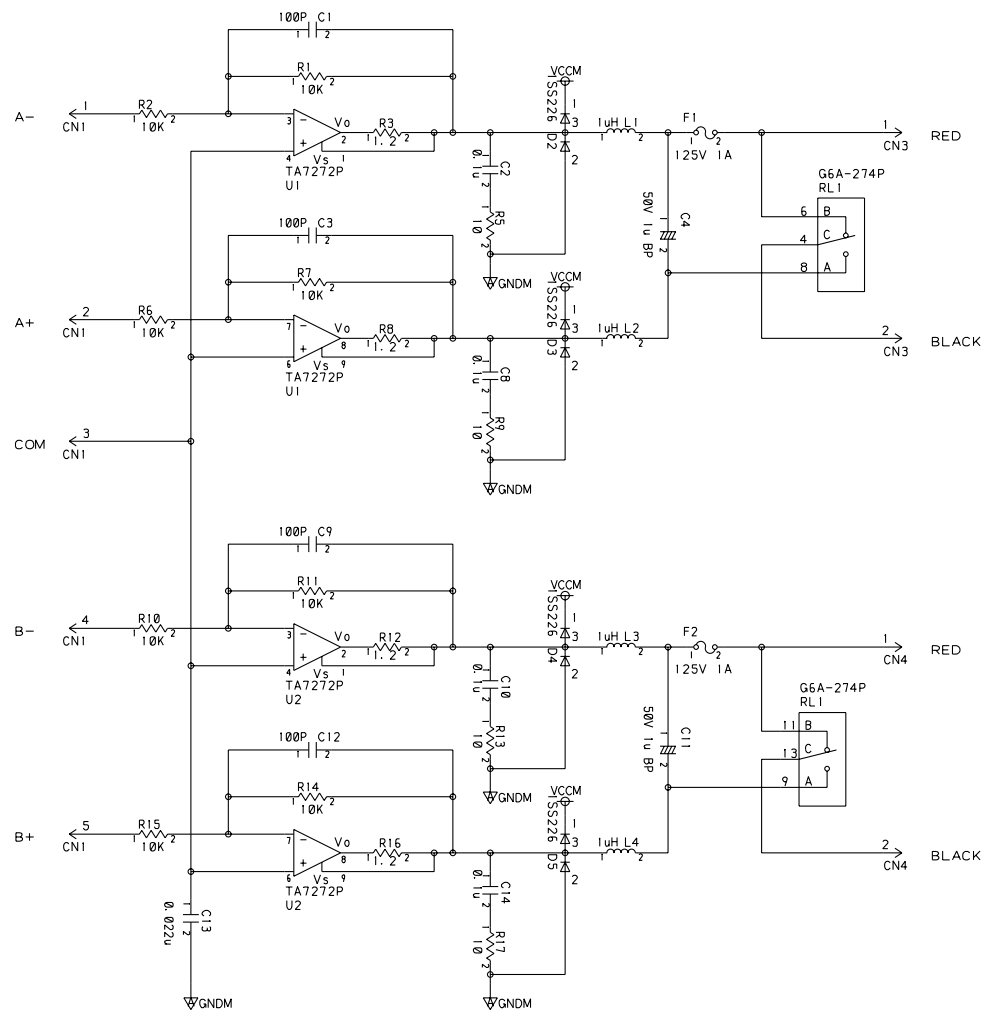
COMPONENT NAME	COMP P.C.BOARD		04/04
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20908A		KR30250 (4/4)	
		SCM005	



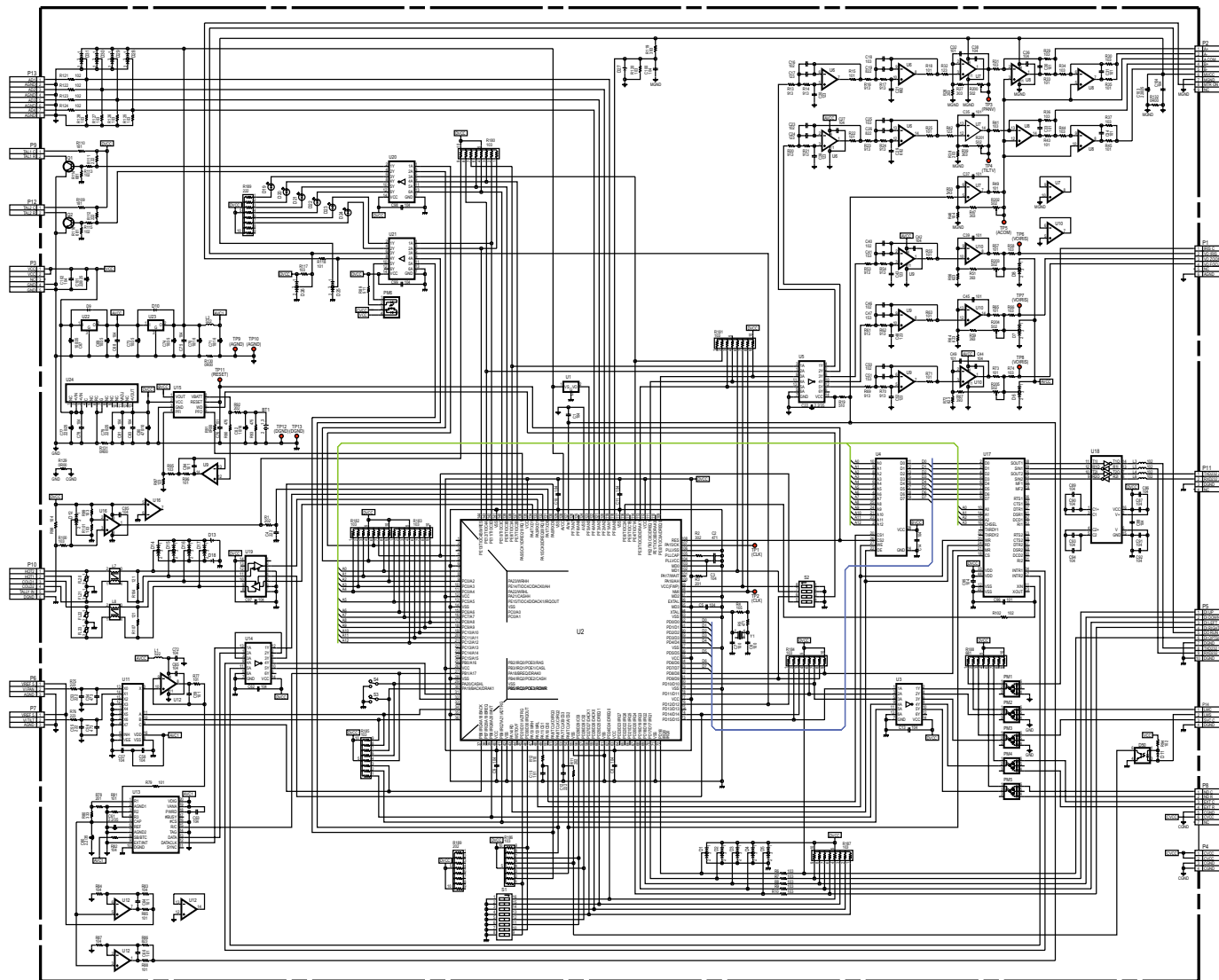
COMPONENT NAME	CON P.C.BOARD		01/01
CIRCUIT BOARD NO.		DRAWING NO.	
VEP20909A		KR1F48 (1/1)	
		SCM006	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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COMPONENT NAME	MOTOR AMP P.C.BOARD	01/01
CIRCUIT BOARD NO.	DRAWING NO.	
1A880S015		
	SCM007	



COMPONENT NAME	CPU P.C.BOARD		01/01
CIRCUIT BOARD NO.		DRAWING NO.	
WPH60JKZ1A			
		SCM008	

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SECTION 2

CIRCUIT BOARD DIAGRAMS

NOTE:
BE SURE TO MAKE YOUR ORDERS OF REPLACEMENT PARTS ACCORDING TO PARTS LIST, SECTION3

CAUTION

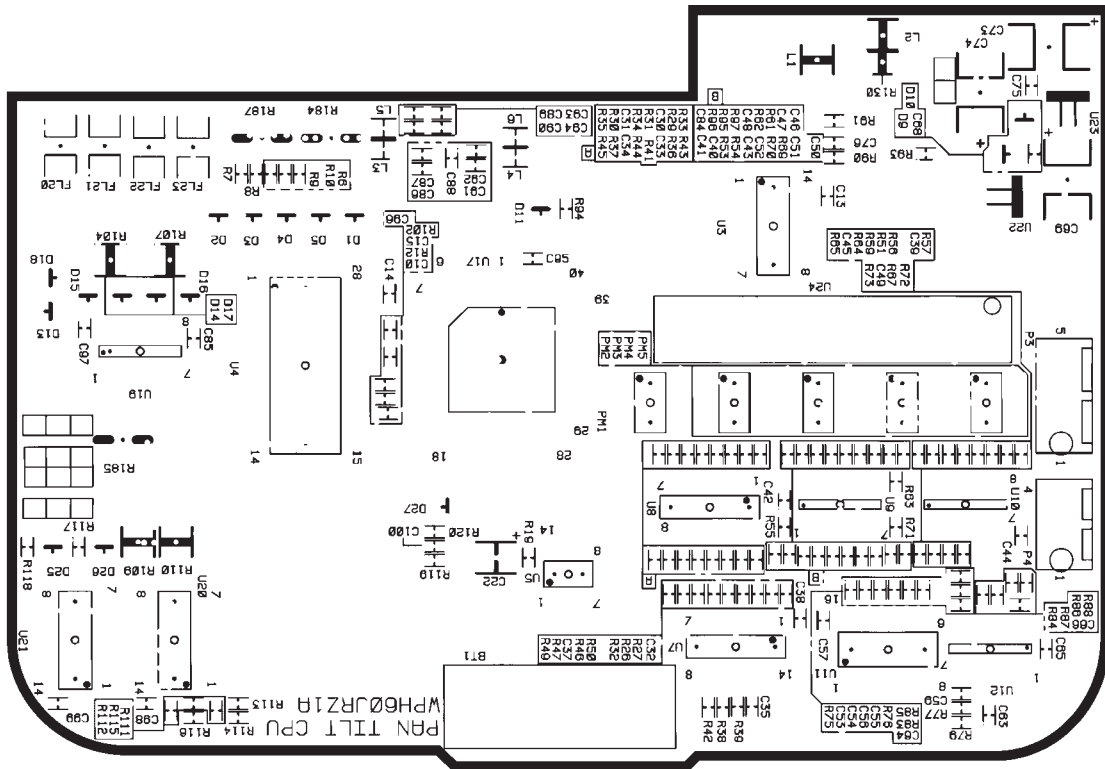
THE ☐ MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

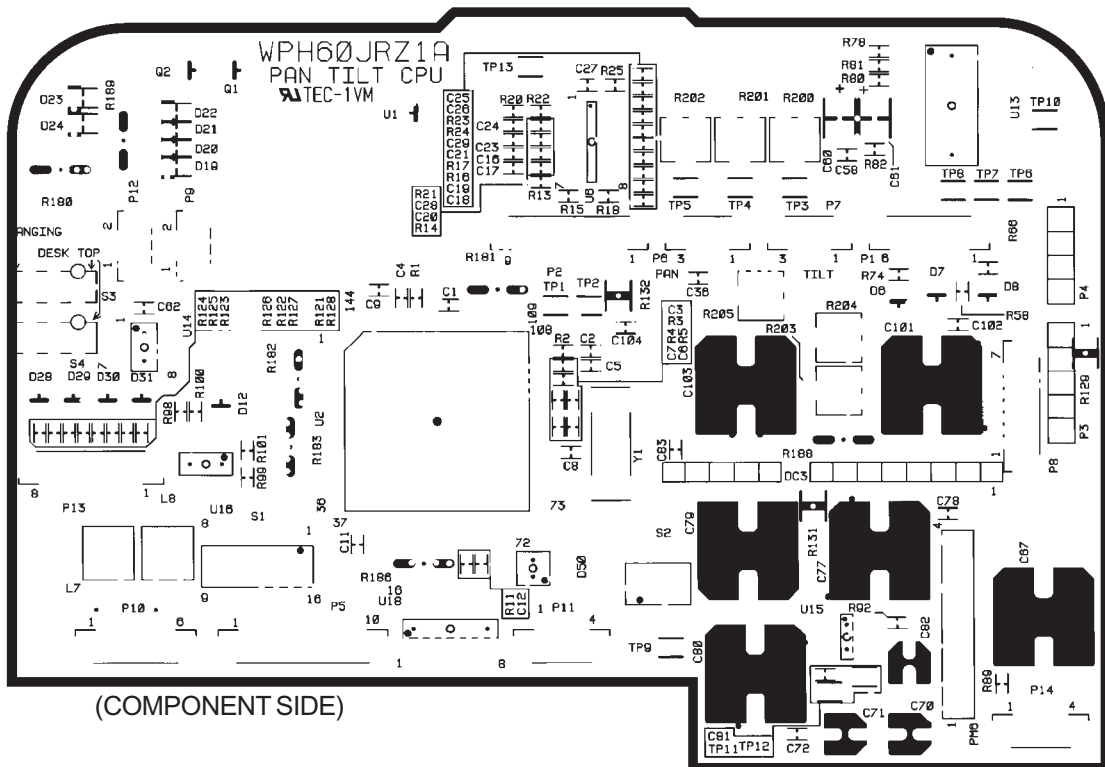
CONTENTS

CPU P.C.BOARD (WPH60JKZ1A)	CBA-1
COMP P.C.BOARD (VEP20908A)	CBA-2
CON P.C.BOARD (VEP20909A)	CBA-2
MOTOR P.C.BOARD (1A880S015)	CBA-2

CPU P.C.BOARD (WPH60JKZ1A)



(FOIL SIDE)



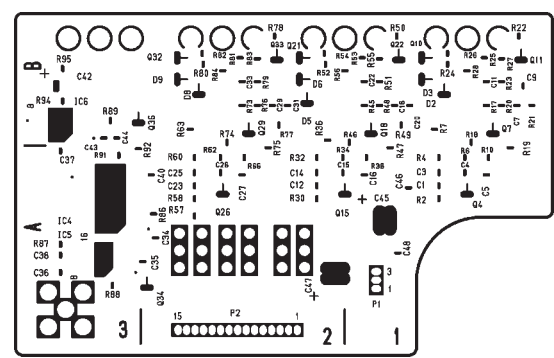
(COMPONENT SIDE)

C

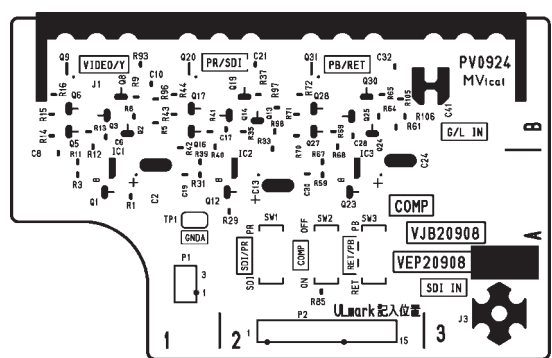
D

A

COMP P.C.BOARD (VEP20908A)

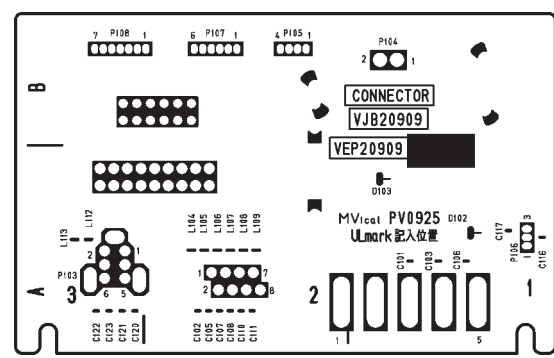


(FOIL SIDE)

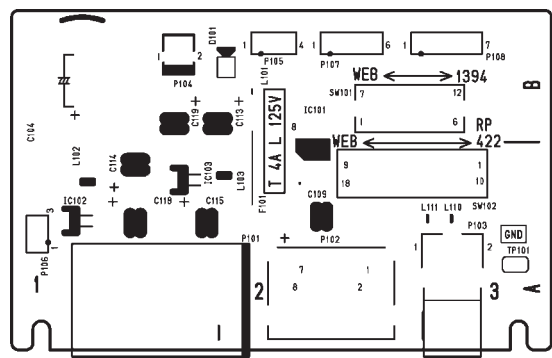


(COMPONENT SIDE)

CON P.C.BOARD (VEP20909A)

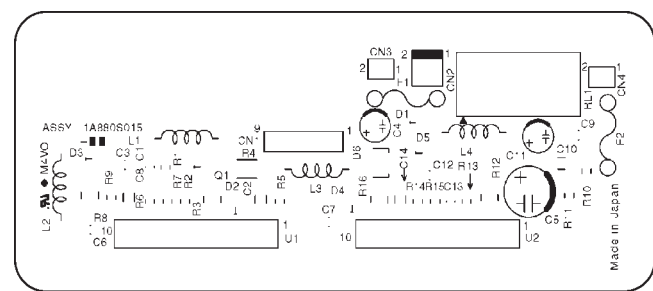


(FOIL SIDE)



(COMPONENT SIDE)

MOTOR P.C.BOARD (1A880S015)



SECTION 3

EXPLODED VIEWS & REPLACEMENT PARTS LISTS

Note:

1. *Be sure to make your orders of replacement parts according to this list.
2. Unless otherwise specified, all resistors are in OHMS, K=1,000 OHMS, all capacitors are in MICROFARADS (μ F), P= μ μ F.
3. The P.C. Board units marked with "■" shown below the main assembled parts.
4. The parts marked with Ⓔ on the exploded view show the electric parts.
5. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
6. The marking (RTL) indicates the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

CONTENTS

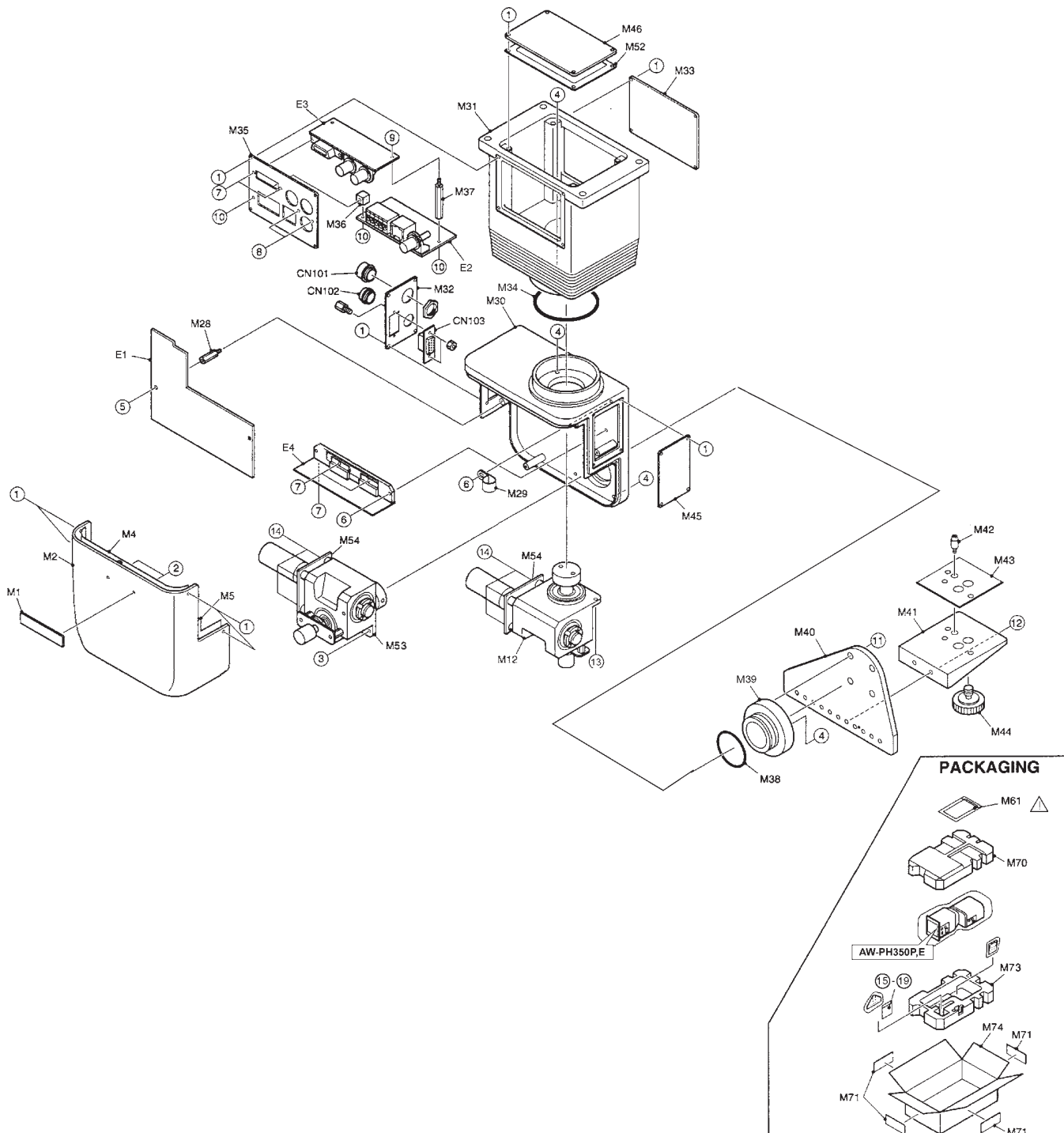
Casing & Packing Parts Assembly	PRT-1
Electrical Replacement Parts List	PRT-4


CASING & PACKING PARTS ASSEMBLY

PRT-1






Components identified with the mark Δ have the special characteristics for safety.
When replacing any of these components, use only the same type.

CASING & PACKING PARTS ASSEMBLY



Components identified with the mark  have the special characteristics for safety.
When replacing any of these components, use only the same type.

ELECTRICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
 E1	WPH60JKZ1A	CPU P.C.BOARD	1	(RTL)	C59	GRM9CH101J5H	C.CAPACITOR 100P	1	
 E2	VEP20908A	COMP P.C.BOARD	1	(RTL)	C60,61	SK31V225MRB	T.CAPACITOR CH 35V 2.2U	2	
 E3	VEP20909A	CONNECTION P.C.BOARD	1	(RTL)	C62,63	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	2	F1H1E104A016
 E4	1A880S015	MOTOR AMP P.C.BOARD	1	(RTL)	C64	GRM9CH101J5H	C.CAPACITOR 100P	1	
					C65	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C66	GRM9CH101J5H	C.CAPACITOR 100P	1	
					C67	F2G1V1010002	E.CAPACITOR 35V 100U	1	
					C68	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C69	F3H1V1060004	T.CAPACITOR CH 35V 10U	1	
					C70,71	VWRVS1C100M	E.CAPACITOR 16V 10U	2	
					C72	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C73,74	F3H1V1060004	T.CAPACITOR CH 35V 10U	2	
					C75	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C76	GRM9CH151J5H	C.CAPACITOR 150P	1	
					C77	F2G1E2210003	E.CAPACITOR 25V 220U	1	
					C78	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C79	F2G1E2210003	E.CAPACITOR 25V 220U	1	
					C80	F2H1A4710001	E.CAPACITOR 25V 470U	1	
					C81	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C82	YWRVS1C100M	E.CAPACITOR 16V 10U	1	
					C83	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
					C84	GRM9CH151J5H	C.CAPACITOR 150P	1	
					C85	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
 E1	WPH60JKZ1A	CPU P.C.BOARD	1	(RTL)	C86,87	YGM1B104Z1CT	C.CAPACITOR 16V 0.1U	2	
					C88	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
BT1	CR2032	BATTERY	1		C89-94	YGM1B104Z1CT	C.CAPACITOR 16V 0.1U	6	
C1	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	C95	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
C2	YGM1C471J1HT	C.CAPACITOR 50V 470P	1		C96	GRM9CH101J5H	C.CAPACITOR 100P	1	
C3	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	C97-00	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	4	F1H1E104A016
C4	GRM9B222K5H	C.CAPACITOR 50V 2200P	1		C101	F2G1E2210003	E.CAPACITOR 25 220U	1	
C5	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	C102	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
C6,C7	F1H1H100A017	C.CAPACITOR 50V 10P	2		C103	F2G1E2210003	E.CAPACITOR 25 220U	1	
C8-11	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	4	F1H1E104A016	C104	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016
C12	GRM9B222K5H	C.CAPACITOR 50V 2200P	1		D1-D8	B0ADDJ000003	DIODE	8	
C13,14	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	2	F1H1E104A016	D9-11	B0JCEE000001	DIODE	3	
C15	GRM9CH151J5H	C.CAPACITOR 150P	1		D12	B0ADDJ000003	DIODE	1	
C16	F1H1H102A190	C.CAPACITOR 50V 1000P	1		D13	B0ZBZ0000029	DIODE	1	
C17	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		D14-17	B0ADDJ000003	DIODE	4	
C18	YGM1B103K1HT	C.CAPACITOR 50V 0.01U	1		D18	B0ZBZ0000029	DIODE	1	
C19	F1H1H822A190	C.CAPACITOR 50V 8200P	1		D25,26	B0ADDJ000003	DIODE	2	
C20	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		D27	B0BC3R600006	DIODE	1	
C21	F1H1H682A190	C.CAPACITOR 50V 6800P	1		D28-31	B0ADDJ000003	DIODE	4	
C22	SK31V225MRB	T.CAPACITOR CH 35V 2.2U	1		D50	B3PBA0000048	DIODE	1	
C23	F1H1H102A190	C.CAPACITOR 50V 1000P	1		DS19-24	TLGD1002	DIODE	6	
C24	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		FL20-23	J0LB00000020	FILTER	4	
C25	YGM1B103K1HT	C.CAPACITOR 50V 0.01U	1		L1,L2	G1C100J000001	COIL	2	
C26	F1H1H822A190	C.CAPACITOR 50V 8200P	1		L3-L6	J0JCC0000004	FILTER	4	
C27	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	L7,L8	Z1YS51R5-2P	COIL	2	
C28	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		P1	K1KA06A00086	CONNECTOR	1	
C29	F1H1H682A190	C.CAPACITOR 50V 6800P	1		P2	K1KA09A00060	CONNECTOR	1	
C30-35	GRM9CH101J5H	C.CAPACITOR 100P	6		P3	K1KA05A00044	CONNECTOR	1	
C36	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P4	K1KA04A00052	CONNECTOR	1	
C37	GRM9CH101J5H	C.CAPACITOR 100P	1		P5	YW533981090	PLUG	1	
C38	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P6,P7	K1KA03A00063	CONNECTOR	2	
C39	GRM9CH101J5H	C.CAPACITOR 100P	1		P8	K1KA07A00079	CONNECTOR	1	
C40	F1H1H102A190	C.CAPACITOR 50V 1000P	1		P9	K1KA02A00066	CONNECTOR	1	
C41	F1H1H153A190	C.CAPACITOR 50V 0.015U	1		P10	K1KA06A00086	CONNECTOR	1	
C42	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P11	K1KA04A00073	CONNECTOR	1	
C43	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		P12	K1KA02A00066	CONNECTOR	1	
C44	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	1	F1H1E104A016	P13	K1KA08A00153	CONNECTOR	1	
C45	GRM9CH101J5H	C.CAPACITOR 100P	1		P14	K1KA04A00073	CONNECTOR	1	
C46	F1H1H102A190	C.CAPACITOR 50V 1000P	1		PM1-M5	AQV212S	RELAY	5	
C47	F1H1H153A190	C.CAPACITOR 50V 0.015U	1		PM6	AQZ102	RELAY	1	
C48	F1H1H123A190	C.CAPACITOR 50V 0.012U	1		Q1,Q2	B1ABCF000031	TRANSISTOR	2	
C49	GRM9CH101J5H	C.CAPACITOR 100P	1		R1	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
C50	F1H1H102A190	C.CAPACITOR 50V 1000P	1		R2	ERJ3RHD302	M.RESISTOR CH 1/16W 3K	1	
C51	F1H1H153A190	C.CAPACITOR 50V 0.015U	1		R3	ERJ3RHD201	M.RESISTOR CH 1/16W 200	1	
C52	F1H1H123A190	C.CAPACITOR 50V 0.012U	1						
C53	GRM9B222K5H	C.CAPACITOR 50V 2200P	1						
C54	YGM1B473K1CT	C.CAPACITOR 50V 0.047U	1						
C55	GRM9B222K5H	C.CAPACITOR 50V 2200P	1						
C56	YGM1B473K1CT	C.CAPACITOR 50V 0.047U	1						
C57,58	YGM1F104Z1ET	C.CAPACITOR 25V 0.1U	2	F1H1E104A016					

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R4	ERJ3GEYF105	M.RESISTOR CH 1/16W 1M	1	
R5	ERJ3RHD471	M.RESISTOR CH 1/16W 470	1	
R6-10	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	5	
R11	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R12	ERJ3GEYJ510	M.RESISTOR CH 1/16W 51	1	
R13,14	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R15	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R16,17	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R18	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R19	ERJ3GEYJ510	M.RESISTOR CH 1/16W 51	1	
R20,21	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R22	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R23,24	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R25	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R26	ERJ3RHD203	M.RESISTOR CH 1/16W 20K	1	
R27	ERJ3RHD303	M.RESISTOR CH 1/16W 30K	1	
R29	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R31	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R32	ERJ3RHD123	M.RESISTOR CH 1/16W 12K	1	
R33	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R34	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R35	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R36,37	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	2	
R38	ERJ3RHD203	M.RESISTOR CH 1/16W 20K	1	
R39	ERJ3RHD303	M.RESISTOR CH 1/16W 30K	1	
R41	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R42	ERJ3RHD123	M.RESISTOR CH 1/16W 12K	1	
R43	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R44	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R45	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R46	ERJ3RHD104	M.RESISTOR CH 1/16W 100K	1	
R47	ERJ3RHD303	M.RESISTOR CH 1/16W 30K	1	
R49	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R50	ERJ3RHD243	M.RESISTOR CH 1/16W 24K	1	
R51	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	
R53,54	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R55	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R56	ERJ3RHD623	M.RESISTOR CH 1/16W 62K	1	
R57	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R58	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R59	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	
R61,62	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R63	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R64	ERJ3RHD623	M.RESISTOR CH 1/16W 62K	1	
R65	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R66	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R67	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	
R69,70	ERJ3RHD913	M.RESISTOR CH 1/16W 91K	2	
R71	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R72	ERJ3RHD623	M.RESISTOR CH 1/16W 62K	1	
R73	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R74	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R75,76	ERJ3RHD223	M.RESISTOR CH 1/16W 22K	2	
R77	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R78	ERJ3RHD201	M.RESISTOR CH 1/16W 200	1	
R79	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R80	ERJ3RHD333	M.RESISTOR CH 1/16W 33K	1	
R81	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R82	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R83,84	ERJ3RHD104	M.RESISTOR CH 1/16W 100K	2	
R85	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R86	ERJ3RHD823	M.RESISTOR CH 1/16W 82K	1	
R87	ERJ3RHD104	M.RESISTOR CH 1/16W 100K	1	
R88	ERJ3RHD101	M.RESISTOR CH 1/16W 100	1	
R89	ERJ3GEYJ511	M.RESISTOR CH 1/16W 510	1	
R90	ERJ3GEYJ475	M.RESISTOR CH 1/16W 4.7M	1	
R91	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R92	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R93	ERJ3GEYJ475	M.RESISTOR CH 1/16W 4.7M	1	
R94	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R95	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R96	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R97	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R98	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R99-01	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R102	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R104	ERJ14YJ121	M.RESISTOR CH 1/4W 120	1	
R107	ERJ14YJ121	M.RESISTOR CH 1/4W 120	1	
R109,10	ERJ14YJ181	M.RESISTOR CH 1/4W 180	2	
R111,12	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R113	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R114	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R115	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	1	
R116	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R117	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R118	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R119	ERJ3RHD393	M.RESISTOR CH 1/16W 39K	1	ERJ3RHD393V
R120	ERJ3RHD103	M.RESISTOR CH 1/16W 10K	1	
R121-24	ERJ3GEYG102	M.RESISTOR CH 1/16W 1K	4	
R125-28	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	4	
R129-32	ERJ8GEY0R00	M.RESISTOR CH 1/8W 0	4	
R180-87	D1HA10380003	C.RESISTOR 1/16W 10K	8	
R188	D1HA68180001	C.RESISTOR 1/16W 680	1	
R189	D1HA22280002	C.RESISTOR 1/16W 2.2K	1	
R200-05	D3EC45020006	V.RESISTOR 1/4W 5K	6	
S1	YWCHS08B	SWITCH	1	
S2	YWCHS04TB	SWITCH	1	
S3,S4	K0D126A00001	SWITCH	2	
TP1-13	YWRCT2125TPV	TERMINAL PIN	13	
U1	C1ZBZ0001200	IC	1	
U2	C2DBKG000002	IC	1	
U3	YWSN74LS07NS	IC	1	
U4	YWHM6264BLFP	IC	1	
U5	COJBAB000196	IC	1	
U6	LMC6484IM	IC	1	
U7,U8	COABCB000021	IC	2	
U9,10	LMC6484IM	IC	2	
U11	YW,C14051BF	IC	1	
U12	LMC6484IM	IC	1	
U13	COFBAH000004	IC	1	
U14	COJBAB000196	IC	1	
U15	COEBJ0000043	IC	1	
U16	COBBB0000006	IC	1	
U17	C1DZ00000005	IC	1	
U18	C1DB000000294	IC	1	
U19	C1DB000000295	IC	1	
U20	COJBCZ000137	IC	1	
U21	YWSN74LS07NS	IC	1	
U22	COCBAAH00002	IC	1	
U23	CODBZGH000001	IC	1	YW78L05UATE2
U24	HRD050R6	IC	1	
X1	BCR20V4	HOLDER	1	
Y1	H0J600400003	CRYSTAL OSCILLATOR	1	
■ E2	VEP20908A	COMP P.C.BOARD	1 (RTL)	
C1	YGM1B103K1HT	C.CAPACITOR CH 50V 0.01U	1	F1H1H103A190
C2	F3H0J2270002	T.CAPACITOR CH6.3V 220U	1	
C3	5X821K5VT	C.CAPACITOR CH 50V 820P	1	F1H1H821A013
C4	YGM1C101J1HT	C.CAPACITOR CH 50V 100P	1	F1H1H101A231
C5,C6	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	2	F1H1E104A016
C7	YGM1C330J1HT	C.CAPACITOR CH 50V 33P	1	F1H1H330A231
C8	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C10	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C11	ECUX1H030CCV	C.CAPACITOR CH 50V 3P	1	
C12	YGM1B103K1HT	C.CAPACITOR CH 50V 0.01U	1	F1H1H103A190
C13	F3H0J2270002	T.CAPACITOR CH6.3V 220U	1	
C14	5X821K5VT	C.CAPACITOR CH 50V 820P	1	F1H1H821A013
C15	YGM1C101J1HT	C.CAPACITOR CH 50V 100P	1	F1H1H101A231
C16,17	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	2	F1H1E104A016

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C18	YGM1C470J1HT	C.CAPACITOR CH 50V 47P	1	
C19	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C21	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C22	YGM1C050C1HT	C.CAPACITOR CH 50V 5P	1	F1H1H4R9A243
C23	YGM1B103K1HT	C.CAPACITOR CH 50V 0.01U	1	F1H1H103A190
C24	F3H0J2270002	T.CAPACITOR CH6.3V 220U	1	
C25	5X821K5VT	C.CAPACITOR CH 50V 820P	1	F1H1H821A013
C26	YGM1C101J1HT	C.CAPACITOR CH 50V 100P	1	F1H1H101A231
C27,28	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	2	F1H1E104A016
C29	YGM1C470J1HT	C.CAPACITOR CH 50V 47P	1	
C30	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C32	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C33	YGM1C050C1HT	C.CAPACITOR CH 50V 5P	1	F1H1H4R9A243
C34	YGM1C180J1HT	C.CAPACITOR CH 50V 18P	1	F1H1H180A231
C35-38	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	4	F1H1E104A016
C40	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C41	EEVHP1C100	E.CAPACITOR 16V 10U	1	
C42	F3F1C1060002	T.CAPACITOR CH 16V 10U	1	
C43,44	YGM1F105Z1AT	C.CAPACITOR CH 10V 1U	2	
C45	SK31V156KRD0	T.CAPACITOR CH 35V 15U	1	F3H1V1560001
C46	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
C47	SK31V156KRD0	T.CAPACITOR CH 35V 15U	1	F3H1V1560001
C48	YGM1F104Z1ET	C.CAPACITOR CH 25V 0.1U	1	F1H1E104A016
D2,D3	MA3J14300L	DIODE	2	
D5,D6	MA3J14300L	DIODE	2	
D8,D9	MA3J14300L	DIODE	2	
IC1-C3	TC4W53FU	IC	3	
IC4	MC14538BF	IC	1	C0JBAM000009
IC5	YWL1881M	IC	1	
IC6	C0ABCA000038	IC	1	
J1	P2287	CONNECTOR	1	K1QBB4BB0003
J3	K1QBB1BA0011	CONNECTOR	1	
P1	K1KA03A00055	CONNECTOR	1	
P2	53047-1510	CONNECTOR	1	K1KA15A00022
Q1	2SA1532-CD	TRANSISTOR	1	
Q2,Q3	2SC3931-C	TRANSISTOR	2	
Q4	2SA1532-CD	TRANSISTOR	1	
Q5	2SD1819QRS	TRANSISTOR	1	
Q6,Q7	2SK662-R	TRANSISTOR	2	
Q8	2SC3931-C	TRANSISTOR	1	
Q9	XP4601	TRANSISTOR-RESISTOR	1	
Q10	2SD1820A-R	TRANSISTOR	1	
Q11	2SB1219A-R	TRANSISTOR	1	
Q12	2SA1532-CD	TRANSISTOR	1	
Q13,14	2SC3931-C	TRANSISTOR	2	
Q15	2SA1532-CD	TRANSISTOR	1	
Q16	2SD1819QRS	TRANSISTOR	1	
Q17,18	2SK662-R	TRANSISTOR	2	
Q19	2SC3931-C	TRANSISTOR	1	
Q20	XP4601	TRANSISTOR-RESISTOR	1	
Q21	2SD1820A-R	TRANSISTOR	1	
Q22	2SB1219A-R	TRANSISTOR	1	
Q23	2SA1532-CD	TRANSISTOR	1	
Q24,25	2SC3931-C	TRANSISTOR	2	
Q26	2SA1532-CD	TRANSISTOR	1	
Q27	2SD1819QRS	TRANSISTOR	1	
Q28,29	2SK662-R	TRANSISTOR	2	
Q30	2SC3931-C	TRANSISTOR	1	
Q31	XP4601	TRANSISTOR-RESISTOR	1	
Q32	2SD1820A-R	TRANSISTOR	1	
Q33	2SB1219A-R	TRANSISTOR	1	
Q34	2SA1532-CD	TRANSISTOR	1	
Q36	2SK662-R	TRANSISTOR	1	
R1	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	1	
R2	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R3	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R4	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R5	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R6	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	
R7	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R9	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R10	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R11	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R12	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R13	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R14	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R15,16	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R17	ERJ3RBD362	M.RESISTOR CH 1/16W 3.6K	1	
R18	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R19	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R20	ERJ3RBD821	M.RESISTOR CH 1/16W 820	1	
R22	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R23	ERJ3RBD622	M.RESISTOR CH 1/16W 6.2K	1	
R24-27	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R28,29	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	2	
R30	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R31	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R32	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R33	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R34	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	
R35	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R36	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R37	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R38	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R39	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R40	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R41	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R42	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R43,44	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R45	ERJ3RBD272	M.RESISTOR CH 1/16W 2.7K	1	
R46	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R47	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R48	ERJ3RBD561	M.RESISTOR CH 1/16W 560	1	
R50	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R51	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R52-55	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R56,57	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	2	
R58	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R59	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R60	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R61	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R62	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	
R63	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R64	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R65	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R66	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R67	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R68	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R69	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R70	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R71,72	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R73	ERJ3RBD272	M.RESISTOR CH 1/16W 2.7K	1	
R74	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R75	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R76	ERJ3RBD561	M.RESISTOR CH 1/16W 560	1	
R78	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R79	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R80-83	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R84	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	1	
R85	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R86	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R87	ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1	
R88	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R89	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R91	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R92	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R93	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R94	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R95	ERJ3RBD302	M.RESISTOR CH 1/16W 3K	1	
R96	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R98	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R106	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R7	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R9	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R10	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R11	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R12	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R13	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R14	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R15,16	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R17	ERJ3RBD362	M.RESISTOR CH 1/16W 3.6K	1	
R18	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R19	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R20	ERJ3RBD821	M.RESISTOR CH 1/16W 820	1	
R22	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R23	ERJ3RBD622	M.RESISTOR CH 1/16W 6.2K	1	
R24-27	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R28,29	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	2	
R30	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R31	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R32	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R33	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R34	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	
R35	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R36	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R37	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R38	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R39	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R40	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R41	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R42	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R43,44	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R45	ERJ3RBD272	M.RESISTOR CH 1/16W 2.7K	1	
R46	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R47	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R48	ERJ3RBD561	M.RESISTOR CH 1/16W 560	1	
R50	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R51	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R52-55	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R56,57	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	2	
R58	ERJ3RBD181	M.RESISTOR CH 1/16W 180	1	
R59	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R60	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R61	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R62	ERJ3RBD911	M.RESISTOR CH 1/16W 910	1	
R63	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R64	ERJ3GEYJ162	M.RESISTOR CH 1/16W 1.6K	1	
R65	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R66	ERJ3RBD102	M.RESISTOR CH 1/16W 1K	1	
R67	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R68	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R69	ERJ3GEYJ202	M.RESISTOR CH 1/16W 2K	1	
R70	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R71,72	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R73	ERJ3RBD272	M.RESISTOR CH 1/16W 2.7K	1	
R74	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R75	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R76	ERJ3RBD561	M.RESISTOR CH 1/16W 560	1	
R78	ERJ3GEYJ132	M.RESISTOR CH 1/16W 1.3K	1	
R79	ERJ3RBD332	M.RESISTOR CH 1/16W 3.3K	1	
R80-83	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R84	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	1	
R85	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R86	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R87	ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1	
R88	ERJ3GEYJ512	M.RESISTOR CH 1/16W 5.1K	1	
R89	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R91	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R92	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R93	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R94	ERJ3RBD223	M.RESISTOR CH 1/16W 22K	1	
R95	ERJ3RBD302	M.RESISTOR CH 1/16W 3K	1	
R96	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R98	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R106	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	

